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Knowledge, Attitudes, and Beliefs of Cardiovascular Disease Prevention in Young Georgian Adults

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KNOWLEDGE, ATTITUDES, AND BELIEFS OF CARDIOVASCULAR DISEASE

PREVENTION IN YOUNG GEORGIAN ADULTS

A Dissertation

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By

Kimberley A. Crawford

May 2022

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Approved February 17, 2022

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ABSTRACT

KNOWLEDGE, ATTITUDES, AND BELIEFS OF CARDIOVASCULAR DISEASE

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Dissertation supervised by Dr Karen Jakub

Introduction: Cardiovascular disease (CVD) accounts for 46% of all mortality in the country of Georgia (former Soviet Union). Young adults in that country have not been studied regarding CVD and a need exists to understand lifestyle modifications to promote cardiovascular health.

Design: An interpretive description qualitative design was used to explore Georgian young adults' knowledge, attitudes, and beliefs of CVD preventative practices and life experiences.

Methods: A convenience sample of 19 ethnic Georgian participants (18 to 40 years old) who were fluent in either English, Georgian, or Russian from a local private university

was used. Semi-structured interviews were conducted via video conferencing utilizing an interpreter.

Results: Four themes were identified: 1) CVD and risk factor knowledge, 2) prevention attitudes, beliefs, and gender differences, 3) health literacy influences, and 4) culture and societal impacts. CVD knowledge was limited and influenced by health literacy and the current healthcare system in Georgia.

Conclusion: Cultural and societal gender norms influence cardiovascular health behaviors.

DEDICATION

This is dedicated to my father, Terry Crawford Sr., and my friend, Donald

MacLeod, both of which would be alive today if cardiovascular disease did not take them

both so early.

ACKNOWLEDGEMENT

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LIST OF ABBREVIATIONS

AHA (American Heart Association)

CVD (cardiovascular disease)

CV (cardiovascular)

HCP (healthcare providers)

MI (myocardial infarction)

WHO (World Health Organization)

UN (United Nations)

Knowledge, Attitudes, and Beliefs of Cardiovascular Health in Transcaucasia: An Integrative

Review

Abstract

Introduction:

Cardiovascular disease (CVD) mortality rates in Transcaucasia, i.e., Armenia, Azerbaijan, Georgia, range from 44% to 64%. This integrative review examined the literature regarding knowledge, attitudes, and beliefs of CVD of adults living in this region. The study aims were to identify how these attributes were described and measured.

Methods:

Using Whittenmore and Knafl methodology, key terms were searched in PubMed, CINAHL, and Scopus. Methodological rigor and data relevance were evaluated using the Checklist for Assessing the Validity of Descriptive/ Correlational Studies from the Joanna Briggs Institute.

Results:

 Quality scores from seven sample studies ranged from 1 (low) to 7 (high) out of 10. Knowledge was studied most often while attitudes and beliefs were minimally included. Examination of modifiable risk factors was limited.

Discussion:

Research is needed with increased rigor, the inclusion of cultural component effects, and possible interventions related to knowledge, attitudes, and beliefs of CVD in this population.

Keywords: cardiovascular disease, knowledge, beliefs, Country of Georgia, Armenia, Azerbaijan

Knowledge, Attitudes, and Beliefs of Cardiovascular Health in Transcaucasia: An Integrative

Review

Cardiovascular disease (CVD) is the largest contributor to adult mortality in the world

(World Health Organization, 2017). In the last decade, both the World Health Organization

(WHO) and the United Nations (UN) have focused on setting global targets for decreasing

premature CVD mortality. Premature death is defined as death that occurs between 30 and 70-

years-old (United Nations General Assembly, 2015; World Health Organization, 2013). One of

the UN Sustainability Development Goals is to reduce total worldwide premature mortality (12.4

million) from non-communicable disease by a third by 2030; CVD is the highest (6.4 million)

(Cao et al., 2018).

To reach this goal, a focus on primary and secondary prevention, particularly risk factors

in CVD, is crucial. Most CVD risk factors are modifiable, preventable, and related to learned

behavior (Goldstein et al., 2014). According to the American Heart Association (AHA), the

major modifiable risk factors are tobacco smoking, hypercholesterolemia, hypertension, physical

inactivity, obesity, and diabetes; minor modifiable risk factors include stress, alcohol, and diet

(American Heart Association, 2018). Unfortunately, many of these risk factors are undetectable

unless one is screened early or becomes symptomatic in a later disease stage (American Heart

Association, 2017).

Although CVD in high-income countries comprises 30% of all mortalities, low-to-middle

income countries, such as in the former Soviet Union (FSU), are disproportionally affected

(Murphy et al., 2018). The FSU fell in the early 1990s, leaving a crippled healthcare

infrastructure in recovery that has contributed to increased CVD mortality (Murphy et al., 2018).

Since the early 2000s, these countries have steadily improved cardiovascular health due largely

to healthcare reform, yet CVD mortality in this region is still one of the highest in the world (McAloon et al., 2016; Murphy et al., 2018).

Armenia, Azerbaijan, and Georgia are three FSU countries that make up the Transcaucasian region, also known as South Caucasus. The number one contributor to mortality is CVD and ranges from 44% to 64% in Transcaucasia (World Health Organization, 2018a, 2018b, 2018c). Tobacco product use in this region ranges from 42% to 54% among males and less than 6% among females (World Health Organization, 2018a, 2018b, 2018c). Hypertension rates in adults living in Armenia (27%), Azerbaijan (23%), and Georgia (32%) are higher than what is seen in the Americas region (17.6%) and Europe (23%) (World Health Organization, 2015). It is not unusual for people in Transcaucasia to seek care only after an incident occurs, such as a myocardial infarction or stroke (Mirzikashvili & Baramidze, 2017; Sargsyan et al., 2016; Verulava et al., 2017).

Knowledge, attitudes, and beliefs. Knowledge and recognition of modifiable risk factors, their importance, and their role in CVD development are critical to reducing CVD. Early studies suggest that modifiable risk factor knowledge promotes preventative measures that reduce CVD risk globally (Meischke et al., 2000). In addition, in the US, when a woman in a family has this knowledge, preventative measures were often extended to the other family members (Mosca et al., 2006). Individuals in higher income brackets and education levels are more likely to have advanced knowledge of cardiovascular risk factors (Konicki, 2012). Risk factor knowledge is fundamental to understanding and managing CVD (Tran et al., 2017; Trejo et al., 2018).

However, knowledge does not directly result in conducive attitudes or beliefs necessary to motivate a person to change behavior (Jensen & Moser, 2008; Konicki, 2012). People are

more motivated to change behavior when they believe they are susceptible, thereby changing attitudes and beliefs about their preventative healthcare interventions (Jensen & Moser, 2008). Moreover, when people believe preventative actions have value, people are more motivated to change their behavior (Peltzer & Pengpid, 2018).

Finally, culture and socioeconomic status influence knowledge attainment and attitudes and impact beliefs and behavior (Bryant et al., 2010; Siaki et al., 2012). Shared cultural backgrounds and low socioeconomic settings affect attitudes and beliefs of those who have grown up within a specific population (Siaki et al., 2012; Sin et al., 2010). Attitudes and beliefs resulting from cultural influence affect cardiovascular risk factors through everyday decision-making. Knowledge, attitudes, and beliefs must be considered and included when developing community interventions to positively modify daily decisions to delay or prevent CVD altogether.

Limited research has been published about CVD in Transcaucasia. This integrative review of the literature was conducted to explore and synthesize literature specific to the knowledge, attitudes, and beliefs of CVD and risk factors in adults of ethnic populations of Transcaucasia. This review is based on Whittenmore and Knafl's (Whittenmore & Knafl, 2005) model that includes five stages: identifying the problem, conducting a structured literature search, appraising the quality of data and analyzing data, and synthesizing and presenting the findings. Since literature in this region is less than what is found in developed countries, an integrative review is the best use of diverse data sources to present the state of the science holistically (Hopia et al., 2016). The following specific aims will guide this review:

1. To synthesize the literature regarding knowledge, attitudes, and beliefs of CVD and associated risk factors of adults in the Transcaucasian region and track how these three variables are measured.

2. To identify interventions described in the literature based on the knowledge, attitudes, and beliefs for CVD in the Transcaucasian region.

3. To identify gaps in the literature regarding knowledge, attitudes, and beliefs of CVD and risk factors in the Transcaucasian region to guide future research.

Methods

Search Method

Initially, PubMed was searched under the guidance of a health science librarian to identify key terms utilizing CVD and risk factors, knowledge, attitudes, beliefs, and the Transcaucasian population (Armenia, Azerbaijan, Georgia). Next, multiple synonyms and cardiovascular risk factors were identified from the literature and combined with MEDLINE's Medical Subject Headings to create the final search strategy. This same technique was applied to two other databases, the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Scopus (see Table 1). The search was conducted in August 2019.

Inclusion and Exclusion Criteria

Articles were limited to the following inclusion criteria: human subjects, study population from Armenia, Azerbaijan, and/or Georgia, adults (ages 18 years and older), published in the English language, and knowledge, attitudes, and beliefs of CVD and its modifiable risk factors included as part of an aim, intervention, or questionnaire item. Questionnaire items had to be listed in the article for inclusion in this review. All articles were uploaded to Covidence, an electronic systematic review manager (*Covidence systematic review software*, 2019, February

4,), and utilized Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statements (see Figure 1). The literature search was not limited by dates to capture as many articles as possible that met the inclusion criteria. A total of 394 articles were found across the three databases; 54 duplicates were removed. The remaining 340 articles were then screened based on inclusion criteria. From this screening, 44 articles received a full-text review. Seven articles, six cross-sectional studies, and one quality improvement study, met the criteria and comprised the final sample studies.

Quality Assessment

Each sample article was reviewed in-depth by the first author for its methodological rigor and data relevance using the Checklist for Assessing the Validity of Descriptive/ Correlational Studies from the Joanna Briggs Institute (Pearson et al., 2007). This tool rates each study from 0 (not present, unclear) to 1 (present) based on ten items: sample recruitment technique, size, and representativeness, inclusion framework, reliability and validity of measures, linked to a theoretical framework, description of groups, appropriate statistical analysis, findings significant and linked to a theoretical framework, and generalizable results (Pearson et al., 2007). Each total score was then ranked as low (1-3), medium (4-6), or high (7-10) (Pearson et al., 2007).

A theoretical framework was not used in any of the studies, limiting the rating's range from 1 to 7. Over half of the articles scored a medium-to-high level ranking. Since the quality improvement article is implementation research, it was evaluated using the same scale. All seven articles used appropriate statistical analyses and had at least one significant result. All studies were kept in the final sample, regardless of their quality, due to the small number of articles (see Tables 2 and 3).

Data Analysis

As described by Whittenmore and Knafl (2005), the data synthesis step occurred through categorizing, summarizing, comparing, and interpreting knowledge, attitudes, and beliefs of CVD and risk factors. The sample studies included secondary analyses (n=2), independent studies (n=4), and a quality improvement project (n=1). All studies were reviewed initially for information about knowledge, attitudes, and beliefs and CVD and inclusion of the Transcaucasian adult population. Next, specific risk factors studied, inclusion criteria, design, sample size, setting, and study results about this review's research questions were identified, extracted from each study, and entered in a matrix table facilitating the data analysis process (Pearson et al., 2007). The quality improvement intervention study was analyzed for its sample, size, intervention, and results in post-intervention about the research question. Finally, themes and patterns were identified, and conclusions were drawn and verified (see Tables 2 and 3) (Pearson et al., 2007).

Results

Description of Sample Studies

Sample articles, dated from 1999 to 2013, had adult participants ranging from 83 to 5800 participants; 311 of these participants were healthcare providers while the remaining were laypeople (Aghabekyan et al., 2012; Harhay et al., 2013). Women (73%) comprised a higher percentage of the samples than men (27%) and aligned with the data collection settings and participant availability (Aghabekyan et al., 2012; Harhay et al., 2013; Khachatryan & Balalian, 2013; Roberts et al., 2013; Wold et al., 1999; Zelveian & Podosyan, 2011) (Aghabekyan et al., 2012; Harhay et al., 2013; Khachatryan & Balalian, 2013; Roberts et al., 2013; Wold et al., 1999; Zelveian & Podosyan, 2011). Although all studies included age, it was reported differently

among studies; most studies (n = 6) included participants from young adulthood (18 to 20 years of age) to older adults (greater than 70 years) (Aghabekyan et al., 2012; Arevian et al., 2004; Khachatryan & Balalian, 2013; Roberts et al., 2013; Wold et al., 1999; Zelveian & Podosyan, 2011). Study samples were representative of three countries with Armenia denoted in six of the seven articles (Aghabekyan et al., 2012; Arevian et al., 2004; Harhay et al., 2013; Khachatryan & Balalian, 2013; Roberts et al., 2013; Zelveian & Podosyan, 2011) while Georgia (Harhay et al., 2013; Roberts et al., 2013), and Azerbaijan (Harhay et al., 2013; Roberts et al., 2013) were each noted in two sample articles. Two articles were multi-country studies (Harhay et al., 2013; Roberts et al., 2013) that included participants from Armenia, Azerbaijan, and Georgia.

Synthesis of the Literature

A literature synthesis was conducted by reviewing each of the sample articles for inclusion of knowledge, attitudes, and beliefs of CVD and risk factors and comparing the findings within/among each of these three key study concepts. The results of the synthesis and concepts were often retrieved from questionnaires used within each study. Each questionnaire was different within the sample articles and difficult to compare.

Knowledge of CVD. Knowledge of CVD was defined in three different ways in all but one (n=6) of the sample articles: 1) Can the participant list modifiable risk factors?; 2) Do participants have knowledge of their status of risk factors?; and 3) Does increased knowledge by a healthcare provider increase addressing these risk factors with their patients (Aghabekyan et al., 2012; Arevian et al., 2004; Harhay et al., 2013; Khachatryan & Balalian, 2013; Roberts et al., 2013; Zelveian & Podosyan, 2011)? Participants' ability to list modifiable risk factors was limited. Only one of these six articles concluded that older women, with some level of education,

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being a former or never smoker, and active in the community, were more likely to list smoking as contributing to CVD (Roberts et al., 2013).

Participants' knowledge of their own risk factors, obtained through structured interviews, was described in two of the six articles. (Arevian et al., 2004; Harhay et al., 2013). According to Harhay et al. (2013), 82% of the women and men from Armenia and 44% of the women and 86% of the men from Azerbaijan were unaware that they had hypertension (Harhay et al., 2013). One study measured CVD and risk factors (e.g., body mass index, cholesterol, and blood glucose) in addition to participant's knowledge of CVD and risk factors and concluded that hypertension was positively associated with older age and higher cholesterol levels (Arevian et al., 2004). Two studies determined that women who lived in urban areas were wealthy, and had higher levels of education, were more likely to have optimal blood pressure (Arevian et al., 2004; Harhay et al., 2013).

Healthcare providers' knowledge and treatment of modifiable CVD risk factors were examined in the quality improvement paper (Khachatryan & Balalian, 2013). A continuing education program was conducted for physicians in CVD prevention and management. Participating physicians showed a three-fold improvement in CVD risk assessment; CVD management increased from 38.1% to 84.5%; and dyslipidemia management increased from 7.9% to 62.9% post-training, (Khachatryan & Balalian, 2013) demonstrating a significant positive change due to continuing education.

Attitudes and beliefs of CVD. Attitudes and beliefs of CVD, while included in 4 of the 7 articles, were addressed in 1 or 2 questionnaire items and were not part of each study's research questions (Aghabekyan et al., 2012), (Arevian et al., 2004; Roberts et al., 2013; Wold et al., 2013). In a multi-country (Armenia, Azerbaijan, and Georgia, included) secondary analysis,

researchers discovered that despite over 75% of people in Armenia and Georgia and over 50% of people in Azerbaijan were aware that tobacco use contributed to CVD, only 28% of Armenians, 30% of Georgians, and 41.3% of Azerbaijanians supported a total ban on public tobacco use (Roberts et al., 2013).

Beliefs were demonstrated through participants' behaviors such as taking preventative action to minimize their risk of CVD reoccurrence (Aghabekyan et al., 2012; Arevian et al., 2004; Wold et al., 1999). Only one study was conducted after CVD was diagnosed and concluded a 31% medication noncompliance rate in the Armenian population (Khachatryan & Balalian, 2013). A small percentage of those non-compliant individuals (2%) believed that the medication was ineffective (Khachatryan & Balalian, 2013). Another study reported only 58.8% of those adults with knowledge of hypertension were on antihypertensive medications (Arevian et al., 2004). In one healthcare worker study, behavior change was not reported, despite 66% of practicing physicians and nurse leaders' perceptions that their health was fair or poor, with 36% of the study population having two or more risk factors present (Wold et al., 1999). Researchers did not identify behavior changes related to having this knowledge.

Intervention Studies

Intervention results were only discussed in two studies (Aghabekyan et al., 2012; Khachatryan & Balalian, 2013). Aghabekyan et al. (2012) surveyed 271 patients for medication noncompliance and patient satisfaction after they received a percutaneous coronary intervention. While patient satisfaction was high (77.5% generally satisfied), over 30% were medically non-compliant (Aghabekyan et al., 2012). The top two reasons for medical noncompliance were cost/affordability and unavailability of the medication at the pharmacy (52 and 10 participants. respectively); travel issues, poor memory, and beliefs that the medications were ineffective (4, 3,

and 2 participants, respectively) comprised the other three reasons for noncompliance (Aghabekyan et al., 2012). In Khachatryan and Balalian (2013) a threefold increase in knowledge was noted for CVD risk assessments of lipid and body mass index (BMI) values after physician participants completed a continuing education intervention. Management of both dyslipidemia and CVD increased significantly in the post-training assessment (Khachatryan & Balalian, 2013).

Discussion

This integrative review examined the knowledge, attitudes, and beliefs of CVD among the Transcaucasian population. As illustrated in these studies, residents of this region had limited knowledge of CVD and risk factors. Also, the seven sample papers addressed participants' knowledge of CVD most often without discussing attitudes and beliefs. This approach is consistent with Jensen and Moser (2008) who noted that knowledge was usually addressed by itself in the cardiovascular literature. For example, according to Arevian, et al. (2004), the Armenian population lacks knowledge of both a person's blood pressure and how to improve it, demonstrating confusion around the nature, means, and prevention/ control of hypertension. However, one article did create loose ties between knowledge and attitudes and beliefs. Roberts et al., (2013) showed that smoking rates remained high, while public support of a total ban on public tobacco use remained less than 50% in all three countries. This demonstrates smoking awareness risks exist, but a negative attitude towards risk prevention and behavior change prevails, creating a mismatch between knowledge and attitudes.

Many gaps existed in the sample studies when assessing knowledge, attitudes, and beliefs about CVD in the Transcaucasian population. The quality of the studies presented was somewhat limited due to dated research, sample size and type, the validity and reliability of each

questionnaire, and noncomprehensive coverage of risk factors. The age of the articles is disconcerting. While only three of the studies were conducted in the last ten years, (Harhay et al., 2013; Khachatryan & Balalian, 2013; Roberts et al., 2013) they had the highest rigor and relevance to this review (Harhay et al., 2013; Roberts et al., 2013). More women than men (3 to 1 ratio) were represented in the literature. This is most likely due to when and where the data was collected, (i.e., at home during the day in the largest two articles) (Harhay et al., 2013; Roberts et al., 2013). More evidence is needed from both the general population and healthcare providers about their knowledge, attitudes, and beliefs of CVD and associated risk factors before effective interventions can be developed and implemented.

Questionnaires reported in sample studies lacked records of development and all questionnaires were different, making it difficult to compare the findings. Based on the rule of ten participants per item in a questionnaire, (Schreiber et al., 2006) several of the studies lacked a sufficient number of participants (Arevian et al., 2004; Khachatryan & Balalian, 2013; Wold et al., 1999). Back-translating questionnaires into English was not mentioned in two studies (Arevian et al., 2004; Wold et al., 1999). Also, several studies did not address obtaining ethics committee approval (Arevian et al., 2004; Wold et al., 1999; Zelveian & Podosyan, 2011). One study used a newly created, translated questionnaire that was not recorded for validity and reliability (Waltz et al., 2010; Wold et al., 1999). While two studies mentioned variables measured in their questionnaire, no other details about the questionnaire development or its use in that study were provided (Aghabekyan et al., 2012; Zelveian & Podosyan, 2011).

In addition, all modifiable risk factors were not included in the sample articles. Modifiable risk factors screened by these studies include tobacco use (n=4) (Arevian et al., 2004; Khachatryan & Balalian, 2013; Roberts et al., 2013; Wold et al., 1999), hypertension (n=4)

(Harhay et al., 2013; Khachatryan & Balalian, 2013; Wold et al., 1999; Zelveian & Podosyan, 2011), dyslipidemia (n=2) (Arevian et al., 2004; Khachatryan & Balalian, 2013) obesity and BMI (n=2) (Arevian et al., 2004; Khachatryan & Balalian, 2013), diet and blood glucose (n=2) (Arevian et al., 2004; Khachatryan & Balalian, 2013; Wold et al., 1999), alcohol use (n=1), (Wold et al., 1999) and exercise (n=2) (Arevian et al., 2004; Khachatryan & Balalian, 2013). Assessment of stress levels while exploring specific cultural components were not included. Understanding types of stress and other cultural factors and how they impact beliefs and behaviors of a specific population may identify other variables not considered in preventing CVD (Espinosa de Los Monteros & Gallo, 2013). Study designs that utilize open-ended questions also allows researchers to identify individual differences and meanings in attitudes and beliefs and provide a patient perspective within a cultural context (Munhall, 2012).

A possible reason for lower quality is the limited or no continuing education since initial graduation from medical and nursing school (Khachatryan & Balalian, 2013; Wold et al., 2013). This practice can be attributed to the history of this region's health care. With the fall of the Soviet Union, the Semaskho model of healthcare quickly crumbled (Antoun et al., 2011). This model focused on the number of physicians and nurses rather than on quality, secondary and tertiary care over primary care, and acute care over managing chronic diseases and prevention (Antoun et al., 2011). Also, healthcare was centrally commanded, allocating general government funds based on the number of doctors and not altered regardless of disease incidence (Antoun et al., 2011). Physicians and nurses received little or no continuing education regarding evidenced-based practice due to the lack of resources and performance incentives,[44] and are still unregulated for practice quality and evidence-based knowledge nearly three decades post-Soviet

Union (Wold et al., 2013; Wold et al., 1999). As demonstrated by Khachatryan and Balalian (2013), continuing education can significantly improve CVD risk factor severity.

Nursing Implications. Clinical nurses have the potential to serve as patient advocates and initiate the educational process while working alongside physicians to provide more formal education programs related to CVD and improve the health of these populations (Wold et al., 2013). Nurses dedicated to providing quality evidence-based, culturally appropriate instruction about CVD and associated risk factors are needed. Using a devoted provider for health education has been found to reduce costs and provide higher quality patient education (Schlichting et al., 2007). Moreover, utilizing laypersons for culturally appropriate health education has also been successful (Schlichting et al., 2007).

Due to the privatization of health care in Transcaucasia, clinics and hospital systems now take more responsibility for providing evidence-based, culturally appropriate practice and opportunities for improvement to stay in business (Nadareishvili et al., 2017; Sanders, 2007). Indirect links to an educational intervention about CVD in one study found drastic improvements in the recognition of risk factors and management of CVD by healthcare providers (Harhay et al., 2013). Having a better understanding of risk factor self-knowledge has the potential to decrease CVD morbidity, mortality, overall costs, and improve quality of life (Jensen & Moser, 2008; Schlichting et al., 2007).

Research is necessary to explore how to intervene on a primary prevention level. Exploring knowledge, attitudes, and beliefs would be insightful and improve patient education (Wold et al., 2013). Using a cultural and qualitative approach to review knowledge, attitudes, and beliefs may help direct future health promotion and CVD prevention interventions in this region of the world from a patient perspective. Researchers can improve transparency, quality, and

reproducibility of future research by improving rigor, standardizing biological measurement collection, and including all modifiable risk factors (Waltz et al., 2010). Exploring the cultural components of health in each of these countries is another way to improve research diversity. Studying cultural influences on a person's beliefs, attitudes, and behaviors regarding multiple risk factors can provide a foundation for holistic care and educational program development. Studies with larger samples of healthcare providers and the public are needed. Qualitative research may be an effective way to capture cultural influences on this topic (Munhall, 2012). Research might encourage new policies for promoting health while also implementing laws already present, creating a more sustainable healthcare system.

Limitations

Several limitations exist in this review. First, only articles published in English were considered. English is at least the second, if not third or fourth, language spoken within this region; therefore, research published in other common languages including Armenian, Azerbaijani, Georgian, and Russian may have been missed. Second, articles that did not explicitly state the review's inclusion criteria were excluded from the review. Third, the search terms used in this review may have omitted studies that used other key search terms. Finally, issues related to the nature and design of sample studies pose challenges and were previously discussed.

Conclusion

In this integrative review, knowledge, attitudes, and beliefs about CVD and its risk factors were explored in both the general adult population and healthcare providers within Armenia, Azerbaijan, and Georgia. Seven articles were found with various rigor and relevance to this topic. In this review, knowledge of CVD and cardiovascular risk factors are diminished and

suggest a main contributor to the high CVD mortality rate. Attitudes and beliefs have yet to be

explored as they relate to CVD knowledge in this population.

Implications for Practice

- CVD knowledge in the Transcaucasia population is limited

- Educational programs are needed to improve CVD risk.

- Higher quality CVD research in Transcaucasia is needed.

- Attitudes and beliefs should be further explored.

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Figure 1

Summary of Search Strategy and Selection of Relevant Literature
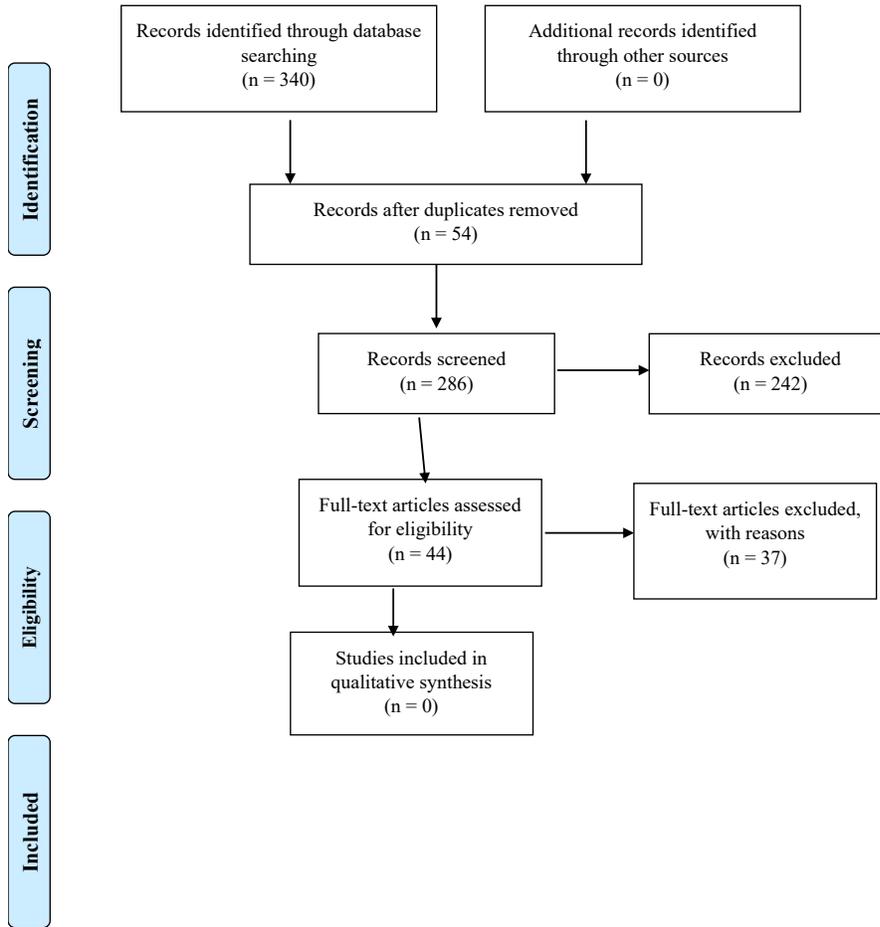
Table 1

Database Search Terms

	Pub Med	CINAHL	SCOPUS
Population	USSR	USSR	USSR
	Soviet Union,	Georgia republic	Soviet Union
	Transcaucasia*	Transcaucasia, Armenia,	Transcaucasia*
	Armenia*	Azerbaijan,	Armenia*
	Azerbaijan*	Southern Caucasus	Azerbaijan*
	Georgia	Soviet Union	Azeri
	Republic of Georgia		Republic of
	Tbilisi		Georgia
	Country of Georgia		Georgian S.S.R.
			Country of
			Georgia
Cardiovascular disease	Cardiovascular disease	Cardiovascular disease*	Cardiovascular Diseases
	Heart*	Cardiovascular health	Diseases
	Cardiovas*	Cardiovascular risk factors	heart*
	Myocardial infarct*	Coronary arteriosclerosis	cardiovas*"
	Coronary disease	Myocardial infarct*	coronary artery
	Heart failure	Stroke,	disease"
	Smoking cessation,	Cerebrovascular accident*	CHF
	Smoking reduction,	Coronary aneurysm	Coronary Disease
	Tobacco smoking,	Peripheral vascular disease	

Pipe smoking	Coronary artery disease	Myocardial
Smoking	Angioplasty	Infarction
Hypertension	Coronary artery bypass	Heart Failure,
High blood pressure	Heart failure	Systolic
Intracranial hypertension	Heart disease	Heart Failure,
Prehypertension	Mediterranean diet	Diastolic
Obesity	Low carbohydrate diet	Heart failure
Obes*	Diet, Fat-restricted	Nutrition
Overweight	Diet, sodium-restricted	Assessment
Cholesterol (total,	Heart-healthy diet	exercis*
VLDL, LDL, HDL)	Cholesterol, Dietary	running
Anticholesteremic	Hypertension High Blood	walking
agents,	Pressure Venous Pressure+	Tolerance
Triglycerides	Systolic Pressure	Smoking
Mediterranean diet,	Intracranial Hypertension+	Cessation
heart-healthy diet,	Pulmonary Arterial	Smoking
low-fat diet,	Hypertension, Isolated	Reduction
low sodium diet,	Systolic	Tobacco Smoking
diabetes mellitus	Intra-Abdominal	Pipe Smoking
metabolic syndrome	Hypertension	smoking
rheumatic heart disease	Masked Hypertension	Hypertension
	Exercise Test	High blood
	Cardiovascular exercise*	pressure

Aerobic Exercises+	Intracranial
Upper Extremity Exercises	Hypertension
Lower Extremity Exercises	Prehypertension
Abdominal Exercises	obes*
Running, Distance	overweight
Running+ Walking+	Cholesterol,
Step	VLDL
Exercise+	Cholesterol,
Warm-Up Exercise	Dietary
Group Exercise	Anticholesteremic
Smoking+	Agents
Passive Smoking	HDL
Smoking Cessation	LDL
Programs	total cholesterol
Smoking Cessation	triglycerides
Assistance (Iowa NIC)	Mediterranean
Smoking Cessation	diet
Tobacco Use Cessation	heart-healthy diet
Products+	low-fat diet
Obesity	low sodium diet
Pediatric Obesity Attitude	Alcohol-Related
to Obesity	Disorders
obesity, Morbid alcohol	Alcohol Drinking

		Alcohol-Related Disorders+ Substance Use Treatment: Alcohol Withdrawal Alcohol Withdrawal Syndrome+ Alcoholic Neuropathy Ethanol+ Alcohol Amnestic Disorder+ diabetes mellitus metabolic syndrome Rheumatic Heart Disease	Metabolic syndrome Diabetes mellitus alcohol drinking rheumatic heart disease
Knowledge, Attitudes, and Beliefs	Attitudes to health, knowledge, health literacy, cultural characteristics, beliefs	Knowledge+ Health Knowledge Student Knowledge Nursing Knowledge Professional Knowledge+ Attitude+ Attitude to Illness+ Attitude of Health Personnel+ Health Beliefs Health Belief (Iowa NOC)+	Attitude to Health Health Literacy Knowledge Cultural Characteristics beliefs

belief*

Table 2

Summary of Sample Studies

Article	Study purpose	Design	Sample/setting	Data collection method	Results and applicability	Validity score
Aghabekyan et al.[1]	To evaluate the relationship between medication noncompliance and patient satisfaction in patients with drug-eluting stent	Cross-sectional, Descriptive	Simple random sampling Collected 2006-2008 Armenia n= 271 (male = 238) Age = 57.5 +/-	Telephone structured interview with Morisky Adherence scale (4 questions) Patient satisfaction Questionnaire	31% noncompliant, most common reason for noncompliance-felt medication was ineffective-0.2% or n = 2	5

	revascularization in Armenia			PSQ-18 (3 items) SF-36- (1 item)		
Arevian et al.[2]	To assess risk factors for CAD among the population of Lebanese-Armenian women, so that appropriate intervention strategies for risk reduction could be planned	Descriptive	Convenience sample Collected 2003) Armenian immigrants in Lebanon n= 83 all women Age= 74% > 50 years 53% = elementary education 60% housewives	Structured interview (18 items- one interviewer) – addressed demographic data, lifestyle behaviors and personal and family health history	41% reported having HTN but 58.8% reported taking antihypertensive medications 46.5% of women stated they were not hypertensive but had BP >= 140/90 (P=0.000)	2

	and implemented			Physical exam- BMI, BP, Cholesterol		
Harhay et al.[3]	To understand patterns of blood pressure in low- and middle- income countries where mortality from chronic disease is particularly high	Cross- sectional	2-stage cluster random sample Albania, Ukraine Armenia (2005) n= 7552 (female 84%) HTN female 21.7% HTN male 27.3% Azerbaijan (2006) n= 10958, (77.5%- Female)	Demographic Household Survey Structured interview and physical exam including Blood pressure	Individual Health knowledge Armenia- 4 out of 5 hypertensive women (82%) and men (81%) were unaware of their condition Azerbaijan- 44% of women and 86% of men were unaware	7

			HTN female- 16.4%		Urban, wealthy,	
			HTN male- 16.6%		most educated	
					women had	
					optimal BP and	
					least likely to	
					have elevated	
					BP	
Roberts et al.[4]	To describe levels of knowledge on the harmful effects of tobacco and public support for tobacco control	Cross-sectional Secondary analysis	Multi-stage sampling (random house only one person) March to May 2010 Armenia n = 1800 (54.3 % female) respondents Azeri n = 1800 (53 % Female)	13 questions with Likert scale answers about knowledge of harm to health of smoking and attitudes	Knowledge score Azerbaijan (2.29 (95% CI 2.23 to 2.35)) and Georgia (2.89 (95% CI 2.82 to 2.96)) had the lowest	7

measures in nine	Georgia n = 2200	of smoking	Know that smoking
countries of the	(63.6 % Female	regulations	causes *CVD* -
former Soviet			Armenia- 1423
Union	Age range even		(79.1%) (77.2 to
and to examine	from 18 years to		80.9
the	60+ years		Azeri- 926
characteristics			(51.4%) (49.1 to
associated with	No physical exam		53.8
this			Georgia- 1613
knowledge and			(73.3%) (71.5
support			to 75.2)
			Stroke – Armenia-
			941 (52.3%)
			(50.0 to 54.6)

Azerbaijan- 205 (11.4%) (9.9 to 12.9)

Georgia - 625 (28.4) (26.5 to 30.3)

Yes, passive smoke bad for Children and Adults

Armenia- 1032 (60.0) (57.7 to 62.3)

Azerbaijan- 1147 (76.3) (74.1 to 78.4)

Georgia - 1664

(79.2) (77.5 to

80.9)

No influence

Armenia- 76 (4.4)

(3.4 to 5.4)

Azerbaijan - 22

(1.5) (0.9 to 2.1)

Georgia - 55 (2.6)

(1.9 to 3.3)

Support for total

Ban in public-

Support for a

total ban was

lowest in

Armenia (28%)

480 (27.6) (25.5 to 29.7) and Georgia (30%)- 609 (29.7) (27.7 to 31.7) Azeri- 644 (41.3) (38.9 to 43.8) Azerbaijan did not have high knowledge of smoking compared to Kyrgyzstan 0.29 (0.17 to 0.50)**

					Armenia Did- 1.58	
					(1.17 to	
					2.12)**	
					Georgia second	
					lowest- 1.03	
					(0.76 to 1.42)	
Wold et al.[5]	To determine the prevalence of selected health risks of health professionals in Tbilisi	Cross-sectional	Convenience sample Georgia 1996 n = 107 Physicians (57) and nurses (53)	Healthier People Health Risk Appraisal 4.0 (HRHRA) – formally CDC/ Carter Center HRA 43 questions	66% percent of respondents perceived their health as fair or poor, while 36% had two or more risk factors for	2

			80% of female 8 unusable Age range = Under 35 to greater than 50		cardiovascular disease.	
Zelveian and Podosyan [6]	To investigate aspects of distribution, awareness, treatment, and control of arterial hypertension in the population of Yerevan.	Cross-sectional Secondary Analysis	Random Sampling Armenia April-May 2004 n = 748, (Males 250) Mean age 41 +/- 18 (Range	Prevalence of Arterial Hypertension and its Risk factors among the adult population in Yerevan study.	Among hypertensives (205 participants), only 61.0% (95% CI: 54.2-67.4%) were aware of their condition; among them	5

	18-90 years)		64.0% (95% CI: 55.3-71.9%) were undergoing antihypertensive drug therapy: 39.0% (95% CI: 32.6-45.8%) of all hypertensives; among those being treated only 22.5% (95% CI: 14.7-32.8%) were controlled: 8.8% (95% CI: 5.6-

13.5%) of all hypertensives (Table

Awareness on HT and treatment rates were significantly higher in females (*p*<0.05). Comparison with developed countries, HT prevalence among 35-64 years age group

population of

Yerevan males

29.7%,

awareness

22.9%, treatment

13.3% and

control 3.7% of

all hypertensives

males aged 18 to

41 (low

awareness) and

females over 41

(low control)

Table 3

Summary of Quality Improvement Article

Article	Study purpose	Design	Sample/setting	Data collection method	Results	Validity score
Khachatryan and Balalian [7]	To assess the difference of pre-and post-training performance evaluation of continuing medical education courses in cardiovascular	Quality Improvement	Convenience Armenia June 25-November 23, 2012 n= 212 medical records surveyed (115 pre-training and 97 post-training)	37 item structured checklist for data collection from patient charts regarding various demographics and CVD risk assessments and management plans	From pre to post for the block of CVD risk assessments-recorded lipids value—from 7.8 to 26.8 % recorded BMI values—from 11.3 to 45.4 %	2

disease	Total physicians	respectively (p
management	215 (125 family	= 0.001).
among physician	physicians, 67	recording of
at primary health	therapeutic	dyslipidemia
care facilities of	physicians, and	management
Armenian	12 cardiologists)	plan: from 7.9
regions	Ages 30-82years	to 62.9 %
		(p\0.000)
		myocardial
		infarction-
		aspirin
		increased
		prescription
		from 90.3 to
		100.0 % (p =
		0.020),

decreased

prescription of

ARB/ACEI

from 85.2 to

60.4 %(p =

0.003)

rehabilitation

activity

counseling

from 15.0 to

37.7 % (p =

0.006).

CVD

management

plan, from

38.1% to 84.5

% assessed before and after trainings respectively (p = 0.000). records of CVD absolute risk from 13.3% to 59.8 % (p = 0.000). thiazides and ARB/ACEI recorded in post-training assessment from 19.5 to

3.1 % and from 78.9 to 59.8 % respectively (p\0.005).

increased difference of other therapy utilized before and after training from 60.0 to 100.0 % was observed (p = 0.001) represented by verospiron in

25 post-training checklists.

The decrease of no management plan in case of elevated cholesterol was almost twofold—from 38.1% to 17.5%.

a decrease in post-training missing

records for

ECG and

urine/creatinine

from 9.7 % to

0 and from

15.0% to 4.1 %

respectively

$(p\backslash0.05)$.

Knowledge, Attitudes, and Beliefs of Cardiovascular Disease in Georgia: An Interpretive

Description

Specific Aims

Despite healthcare reform in the country of Georgia, there is a 64% mortality rate for cardiovascular diseases (CVD), providing a huge economic burden on this former Soviet state (World Health Organization [WHO], 2018). According to the World Health Organization (WHO) (2018a), 25% of the Georgian population died in 2016 from premature deaths (death 30- to 70-years-old) related to noncommunicable diseases, and currently, 29% of the population is diagnosed with or at high risk of developing CVD. Only 38% of the high-risk population has received drug therapy and counseling to prevent heart attack and stroke (World Health Organization, 2018). To reduce CVD events and death, reducing exposure to modifiable risk factors is imperative (Tzoulaki, Elliott, Kontis, & Ezzati, 2016). Understanding people's awareness and perception of their behaviors towards these risk factors in their young adult years can directly impact CVD mortality later in life (WHO, 2019).

A limited amount of research about knowledge, attitudes, and beliefs of CVD exists for the Georgian population. In a recent integrative review linking knowledge, attitude, and beliefs with cardiovascular risk factors, only two articles were found that included Georgia (Crawford, Jakub, Lockhart, & Wold, 2020). In one article, Georgians were asked if smoking (active or passive) caused CVD or stroke; 73.3% were aware of the CVD risk and 28.4% for stroke risk (Roberts et al., 2013). Additionally, only 30% of this same population supported the total ban on smoking in public places, demonstrating a gap between knowledge and attitudes/beliefs (Roberts et al., 2013). Wold, Williams, and Kobaladze (1999) found that out of 99 Georgian physicians and nurses, 66% perceived their health as fair or poor and 36% had two or more cardiovascular

risk factors. A qualitative mini study conducted in Georgia in 2017 suggested that in the general population, primary care was underutilized and education about cardiovascular health comes after the initial attack of a stroke or heart attack (Crawford, 2017). Moreover, no qualitative studies have been published regarding the knowledge, attitudes, and beliefs of cardiovascular risk factors or analyzing differences in attitude between males and females among people living in the country of Georgia.

The purpose of this research study is to explore knowledge, attitudes, and beliefs related to CVD and cardiovascular risk factors in young adults in the country of Georgia. An interpretive description (ID) methodology will be used. The younger adult population (18-years to 40- years old) will be the focus of this study, since they may have knowledge of or participate in modifiable risk behaviors and be less apt to have been diagnosed with CVD. This population will be recruited from a private Georgian university (students, faculty, and staff) until meaningful descriptions that answer the research questions are reached. Individual, semi-structured interviews will be conducted while being audio recorded and simultaneously translated during the interview by a trained medical interpreter. Field notes taken after each interview by the researcher as well as reflexive journaling throughout the analysis process will be collected by the primary researcher (Barolia, Clark, & Higginbottom, 2013). Data will be organized and analyzed utilizing ID (Barolia et al., 2013). Theoretical concepts will be explored to help organize and interpret major concepts in the data leading to practical strategies that can be logically and ethically applied in the clinical setting (Thorne, Con, McGuinness, McPherson, & Harris, 2004) Aim 1: To explore the cardiovascular knowledge and preventative practices of young adult Georgians.

Aim 2: To identify any life experiences that have influenced knowledge, attitudes, and beliefs related to CVD and preventative practices in Georgian young adults.

Aim 3: To identify any distinct gender differences in cardiovascular knowledge, attitudes, and beliefs between young adult men and women in Georgia.

This study will add to the CVD and cardiovascular risk factors evidence in the Georgian population. Having a foundational understanding of where adequate knowledge, positive attitudes, and sound beliefs lie in the Georgian population regarding cardiovascular risk factors creates a platform for assessment, planning, and interventional strategies (Barolia et al., 2013; Tedesco, Di Giuseppe, Napolitano, & Angelillo, 2015). This research will inform reality through an interpretive naturalistic perspective.

Significance

The United Nations created Sustainable Development Goals to improve health in all developmental stages and major diseases, including CVD, throughout the world by 2030 (Cao, Bray, Ilbawi, & Soerjomataram, 2018). To curb the rapid growth in noncommunicable diseases (NCD), a global target was set to reduce the total premature mortality by one third by 2030 (WHO, 2013). According to Cao, et. al., (2018), to meet this goal, high-level political commitments for effective and equitable national surveillance and prioritized prevention, early detection, and treatment programs for the major NCD types are urgently needed in lower resource settings. However, insufficient knowledge of risk factors and the severity of CVD may negatively affect the adoption of changes to a healthy lifestyle and optimum use of preventative services (Mosca et al., 2000; Tran et al., 2017; Trejo, Cross, Stephenson, & Edward, 2018; Wilcox & Stefanick, 1999)

Cardiovascular disease is the largest NCD contributor to morbidity and mortality globally (WHO, 2013). The percentage of CVD as a proportion of global mortality has increased significantly since 2000 (McAloon et al., 2016). Premature deaths, death occurring in adults ages 30- to 70- years, are the greatest impacted (Cao et al., 2018). It is estimated that of the 12.4 million premature deaths worldwide in 2015, 6.2 million were due to CVD (Cao et al., 2018). Cardiovascular disease includes ischemic heart attacks and infarcts, strokes, arrhythmias, and heart failure, with ischemic heart attacks and stroke as the two leading causes of global mortalities (McAloon et al., 2016).

People need to reduce their exposure to modifiable risk factors to impact CVD events and death. (Tzoulaki et al., 2016). Modifiable risk factors are hypertension, hypercholesterolemia, tobacco use, excessive alcohol intake, diabetes mellitus, physical inactivity, obesity, stress, and diet /nutrition (American Heart Association, 2018). Modifying these risk factors has been linked to reducing CVD by as much as 31% (Hu et al., 2000). Unfortunately, many of these risk factors are underestimated or even silent until a major cardiovascular incident, such as myocardial infarction (MI) or stroke, occurs (Rose, Kim, Dennison, & Hill, 2000). Due in part to this silence and despite improvement in public awareness of the severity of CVD, many people fail to link this information and cardiovascular risk factors to their vulnerability (Gholizadeh, Davidson, Salamonson, & Worrall-Carter, 2010).

The CVD burden is unequally distributed globally by geographic regions. Low-to middle- income regions demonstrated a significant increase in CVD (WHO, 2014). Europe has the highest mortality rate of CVD at 47.9%: higher than the global mortality rate (WHO, 2014). Since the fall of the Soviet Union in the early 1990s, the former Soviet Union (FSU) countries have faced economic collapse directly impacting the quality of their healthcare. This has required

healthcare reform in every FSU country in Eastern Europe and Central Asia (Murphy et al., 2018). In 2015, ischemic heart disease death rates in FSU states in Eastern Europe and Central Asia countries were almost two times the rates found in Central Europe and were decreasing in Western Europe (Murphy et al., 2018).

The FSU consists of 15 countries (Plokhy et al., 2016). The country of Georgia is found in Transcaucasia. Despite healthcare reform in Georgia, there is a 64% mortality rate for CVD, providing a huge economic burden (WHO, 2018). In 2016, 25% of the Georgian population died prematurely related to NCD, and currently, 29% of the population is diagnosed or at high risk of developing CVD (WHO, 2018). According to the WHO, cardiovascular risk factors most found in the Georgian population are elevated adult blood pressure (total 32%, male 32%, female 31%), tobacco use starting at age 15-years (total 28%, male 54%, female 5%), and adult obesity (total 23%, male 20%, female 26%) (WHO, 2018). Murphy et al. (2018) discusses disability-adjusted life years (DALYS) and ranked hypertension, total cholesterol, and obesity as the top three burdens contributing to ischemic heart disease. The proportion of the population at high risk for existing CVD is 29% with only 38% of this population receiving drug therapy and counseling to prevent MI or stroke (WHO, 2018). This high risk of CVD is despite reports that CVD guidelines are utilized in at least 50% of the health facilities in the country (WHO, 2018).

Knowledge, Attitudes, and Beliefs

Understanding what is known in a population and how its knowledge impacts one's attitudes and beliefs about cardiovascular risk factors is imperative to reducing barriers and increasing the effectiveness of interventions (Merz et al., 2017). Knowledge, attitudes, and beliefs are independent constructs but interact frequently (Jensen & Moser, 2008). Knowledge of cardiovascular risk factors on the individual level, may help to improve awareness, set goals, or

identify steps towards reaching those goals, but it does not necessarily motivate one to change behavior, nor does heart-healthy behavior predict the knowledge one has of cardiovascular risk factors (Konicki, 2012).

The link between behavior and health (or risk awareness) is important in informing choices about healthy behavior through one's attitudes and beliefs (Jensen & Moser, 2008; Steptoe & Wardle, 1992). Beliefs are related to the idea of something being true or that it does exist (Jensen & Moser, 2008). Attitudes are specific to actual situations whereas beliefs are more abstract, but they both are evaluative in nature (Hofstede, 1998). Attitudes are a compilation of beliefs around a situation or object that predisposes the person to respond preferentially (Hofstede, 1998; Jensen & Moser, 2008). Together both contribute to defining the culture of a specific group of people, despite being individualistic in nature (Hofstede, 1998). Therefore, belief in the value of preventative behavioral action is associated with the probability that the behavior will be performed (Peltzer & Pengpid, 2018).

Understanding the population's knowledge of risk, the attitude attributed to specific behaviors and health beliefs can help researchers and clinicians develop interventions to support the continuation of those behaviors and prevention of CVD (Nigg, Allegrante, & Ory, 2002; Sawyer et al., 2012). Multiple researchers have explored different populations' knowledge of CVD and risk factors, but few have specifically reported on attitudes and beliefs. Age, culture, and gender all have contributed and impacted knowledge, attitudes, and beliefs of cardiovascular risk factors, as described in the following section. In Georgia, little research has been conducted regarding knowledge, attitudes, and beliefs of CVD and cardiovascular risk factors, therefore reviewing literature from other cultures is necessary.

Age-related influences. Several studies have examined CVD and risk factors in different stages of adulthood. The presence of modifiable cardiovascular risk factors (whether known or unknown) that emerge during young adulthood (20- to 55-year-olds) in the United States, is a predecessor of CVDs in older adulthood (great than 55-years-old) (Goldstein, Xie, Hawkins, & Hughes, 2015; Long, Ponder, & Bernard, 2017). One study on premenopausal women from medically underserved populations emphasized the importance of prioritizing and addressing cardiovascular risk factors before menopause through primary and secondary prevention as a possible effective means to combat the CVD epidemic (Konicki, 2012). Other studies in the United States discuss the midlife stroke surge in women 45-to 55-years-old due to an increase in risk factors such as obesity and diabetes (Towfighi, Saver, Engelhardt, & Ovbiagele, 2007).

One study of South East Asian university students and modifiable cardiovascular risk factors, showed habits of smoking, binge drinking, low physical activity, increase weight gain, and poor diet choices had a high prevalence in this age group (Peltzer & Pengpid, 2018). Consistent with other research, one Georgian study found almost 50% of university students in Tbilisi, Georgia, were self-identified as smokers with similar results in both the medical and non-medical students (Chkhaidze, Maglakelidze, Maglakelidze, & Khaltaev, 2013). Of the smokers, 60% expressed the desire to quit for health or financial reasons (Chkhaidze et al., 2013). This desire to quit demonstrates a better understanding of the severity of CVD and a possible shift from their parents' beliefs about smoking (Chkhaidze et al., 2013).

In the United States, during this emerging adulthood age period of the 20- and 30-year-old, this population is heavily influenced by family, peers, social contexts, and identity development, and, if targeted may lead to positive health behavior changes minimizing these risk factors later in life (Goldstein et al., 2015; Lau, Quadrel, & Hartman, 1990). However, more

research is needed despite these studies in this age group. When there is a better understanding of this knowledge and perception in young adulthood, it directly impacts future CVD morbidity and mortality (Mosca, Mochari-Greenberger, Dolor, Newby, & Robb, 2010). Studying this age group is needed to identify and develop early lasting heart-healthy habits to minimize complications later in life and premature death.

Gender and cultural influences. In the United States, physicians are more likely to assign a lower CVD risk category and underdiagnose CVD in female patients compared to their risk-matched male counterparts (Hart, 2005, Mosca 2005). Physicians often view women as worrying needlessly over symptoms and women rationalize away the symptoms as something other than an MI (Emslie, 2005). In a study in the United States researching the knowledge, attitudes, and beliefs of women about cardiovascular risk factors, only 16% were told that they were at risk, while 74% of the participants had at least one risk factor (Merz, 2017). Healthcare providers in Europe are also less likely to educate their female patients on what to look for and when to seek treatment of the risk factor or CVD (Klein, 2001). When CVD is diagnosed in women, it is usually accompanied by a delay in the recognition of signs and symptoms by the female patient and healthcare provider (Emslie, 2005; Klein, 2001).

Men, however, are associated with CVD and frequently male patients are informed by their primary care provider of risk factors, when to seek help and medications to take to minimize their risk by their healthcare provider (Emslie, 2005; Klein, 2001). However, despite knowing they have a risk factor or two, men have other barriers to taking care of themselves. Men who have been diagnosed with hypertension and hyperlipidemia understood that hypertension puts them at a greater risk for ischemic heart disease or death, but saw barriers, such as medication side effects or decreasing masculinity, keeping them from optimal wellness

while living with these risk factors (Long et al., 2017). Maintaining their masculine image is a priority for men (Jakub, 2018). When a male is in a vulnerable position, such as having CVD or a risk factor, the men are limited in their ability to be strong, self-reliant, in-control, and independent, thus threatening their masculinity (Jakub, 2018). To keep one's masculinity, the man may deny symptoms of weakness or even refuse treatment in fear that they will lose some of themselves (Jakub, 2018). This is especially difficult to accept when no symptoms are present.

According to McFarland and Wehbe-Alamah (2014), culture is the "blueprint for guiding human actions and decisions and includes material and nonmaterial features of any group or individual" and it is "more than ethnicity or social relationships" (p.10). Utilizing culture from this perspective, one's cultural heritage becomes a lens through which knowledge, attitudes, and beliefs are filtered (Fernandez, Rolley, Rajaratnam, Everett, & Davidson, 2015; Long et al., 2017). Many studies have examined different cultural aspects of CVD and risk factors and their knowledge, attitudes, or beliefs within that culture. Positive and negative attitudes are passed down through generations and by gender regarding various health habits including types of acceptable physical activity and traditional food dishes consumed (Fernandez et al., 2015; Gupta, Aroni, & Teede, 2017; Long et al., 2017). Habits, feelings towards illness, health, acceptable behaviors of men and women regarding health, and the healthcare provider's views must be assessed when attempting to understand CVD outcomes (Gillum, 2010; Long et al., 2017).

In Eastern Europe, men are 2 to 4 times more likely than women to suffer premature death from CVD (Ezzati, 2015). In Georgian culture, women are responsible for the home and child-rearing while men are expected to be the breadwinners (Torosyan, Gerber, & Gonalons-Pons, 2016; United Nations Development Programme, 2013). In this patriarchal society, helping family members get well by taking care of their basic needs is considered a woman's job while

men participate in leisure activities that encourage binge drinking and smoking (United Nations Development Programme, 2013). Also, sodium consumption leading to CVD and death is highest in the world for both men and women in the country of Georgia (1967 deaths per 1 million adults per year) (Mozaffarian et al., 2014). Understanding knowledge, attitudes, and beliefs within the Georgian culture that influence the everyday aspects of the life of men and women, are vital to developing culturally appropriate education and interventions that may need to be gender specific.

Gap in Knowledge, Attitudes, and Beliefs for CVD Risk and the Country of Georgia

Further research is needed to understand Georgian knowledge, attitudes, and beliefs of CVD and how to best translate them into positive behavior change, thus filling in the belief-behavior gap (Konicki, 2012). Also, since there are limited studies on young adults and their attitudes and beliefs of cardiovascular risk factors, more research is needed to explore understanding in this age group (Peltzer & Pengpid, 2018). The relationship between perceived risk for CVD, motivation to engage in health-promoting behavior in both men and women, and cultural implications of participation in behavior is also important to study (Hart, 2005; Long et al., 2017). No studies have been published regarding these topics in the Georgian population. Defining existing beliefs and attitudes of this unique cultural perspective on health, including risk factors such as diet, tobacco use, and stress, is imperative to building a specific Georgian cultural approach to improve CVD in Georgia.

This unique cultural perspective is best studied on an emic level, something that is missing in the present research, since only quantitative literature has been published on this topic in this region. Qualitative literature provides understanding, interpretation, and meaning regarding culture rather than focusing on correlation, causation, prediction, and control of a

disease or behavior (Munhall, 2012). Without qualitative research, we are unable to understand the personal meaning placed on CVD and risk factors from the cultural perspective (Munhall, 2012). Through ID the results are practical and easily applied in the clinical setting (Thorne, Kirkham, & MacDonald-Emes, 1997).

Nursing Research and Georgian Health

Having a foundational understanding of CVD knowledge, attitudes, and beliefs of a population is important for developing and tailoring interventions to the uniqueness of this culture (Tedesco et al., 2015). Adding to the practical body of knowledge specifically regarding young male and female adults and their knowledge, attitudes, and beliefs about CVD will provide a more individualized understanding of how to improve cardiovascular risk factors in this age group and population. Nurses and other health care workers in Georgia working in primary care and cardiac care units will have a better understanding of gender specific differences regarding common cardiovascular risk factors (Emslie, 2005). Moreover, this may lead to effective educational strategies and management of cardiovascular risk factors, such as high blood pressure and dietary interventions (Long et al., 2017).

<div align="center">

Innovation

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The proposal is innovative for several reasons. Though there are some focused ethnographic studies regarding knowledge, attitudes, and beliefs of cardiovascular risk factors from different western populations (Fernandez et al., 2015; Long et al., 2017; Merz et al., 2017; O'Brien, O'Donnell, McKee, Mooney, & Moser, 2013), a sparse amount has engaged the young adult population and included both men and women though none have been conducted in Georgia. There are no interpretive description designs for the country of Georgia. This information will provide a more focused influence of cultural perspective approach to combating

CVD before it develops, targeting the high CVD premature mortality in the future. Secondly, this study will address modifiable cardiovascular risk factors from a primary preventative perspective and more risk factors than just hypertension and tobacco usage, the two most commonly studied risk factors in Georgia (Chikhladze et al., 2016; Wold et al., 1999). Finally, this research will add to the literature a unique Georgian perspective that has not been applied before concerning CVD. Though the country of Georgia and its population has been occupied and influenced by many countries, this unique population has maintained its own culture and lifestyle for many centuries. For instance, the Georgian language is one of the 10 original languages of the world dating back to the fourth century AD (Misachi, 2017; Rapp & Crego, 2017). Therefore, understanding how this culture has maintained its uniqueness, knowledge, attitudes, and beliefs are key to developing appropriate nursing interventions to combat CVD and premature death in this country.

Approach

Preliminary Studies

Based on a recent integrative review of the literature on knowledge, attitudes, and beliefs of cardiovascular risk factors and CVD within the Transcaucasian region of the world, very little research exists on this topic (Crawford et al., 2020). The Transcaucasian region consists of the countries of Armenia, Azerbaijan, and Georgia (De Waal, 2010). In this integrative review, seven articles were identified as fitting these criteria; only two of these articles included Georgia (Roberts et al., 2013; Wold et al., 1999). One article found Georgians believed smoking caused CVD, such as MI or stroke, with 73.3% aware of the risk (Roberts et al., 2013). However, only 30% of this same population supported a total ban on smoking in public places (Roberts et al., 2013). This implies that though there is a high percentage of knowledge of smoking as a cause,

less than half believe that it will contribute to CVD. In Wold et al. (1999), 66% of the physicians and nurses that responded to a questionnaire perceived their health as fair or poor, over 50% had at least one cardiovascular risk factor and 36% had two or more known cardiovascular risk factors. This population shows a closer connection between knowledge and belief of health; however, this population was by trained health care workers rather than the general population as was with the other study (Roberts et al., 2013; Wold et al., 1999).

A mini study conducted by the PI in 2017 looked at the lived experiences of Georgians after they experienced an MI (Crawford, 2017). The participants were interviewed individually in a place of their choosing and an interpreter provided direct translation during the interviews for the participant and researcher. The participants were asked about their experiences after their MI, any interaction they had with healthcare providers or non-healthcare providers, and how their current lives compared with their lives prior to having the MI.

Seven participants, four men, and three women, were interviewed during two weeks in October 2017. The transcribed interviews were uploaded to NVivo 11 software and analyzed using hermeneutical phenomenology methods. Though this study has been completed but not published, the researcher identified the following themes: the importance of community, patient health literacy predominantly stemming from contact with a physician and not a nurse, their beliefs about what constitutes health, and their resiliency to continue living after difficult experiences (Crawford, 2017). The participants listed modifiable risk factors and personal changes they made to decrease their risk factors after the MI. They reported their physician informed them of these risk factors.

Research Design

An ID methodology will be used to address the aims of the study, i.e., 1) To explore the cardiovascular knowledge and preventative practices of young adult Georgians, 2) To identify any life experiences that have influenced knowledge, perceptions, and motivations related to cardiovascular disease and preventative practices in young adult Georgians, and 3) identify any distinct differences in CVD knowledge, attitudes, and beliefs between young men and women in Georgians.

Interpretive description research identifies patterns and structures through an inductive process within the topic of study (Hunt, 2009). This methodology helps describe the experiences of health and illness through the eyes of the patient (Thorne et al., 1997). The knowledge (both theoretical and practical), that a researcher brings to the study becomes a platform on which the study is designed (Hunt, 2009). In addition, ID involves two different techniques: concurrent data collection and analysis and results reflecting clinical practice (Barolia et al., 2013). Data collection and analysis is concurrent and constantly compared to discover the themes and overall picture of the phenomena while considering individual variation (Barolia et al., 2013). The results of the study then will reflect clinical practice creating practitioner-friendly results (Barolia et al., 2013). The methodology is appropriate to answer the current research questions. Through this design, the research focuses on a situation within the culture rather than the culture (Knoblauch, 2005). Interpretive description allows for a narrow focus to explore knowledge, attitudes, and beliefs of the young adult Georgian population regarding cardiovascular risk factors and CVD. This methodology also allows for a shorter research period in the field or enabling interviews to be conducted via video feed if travel is unavailable. The setting will be on a large private university campus in the capital city of Tbilisi. The young adults will be recruited

from students, faculty, and staff. Data analysis will begin simultaneously with data collection. The timeline for the proposed study is included in Appendix A.

Setting and Population

The University of Georgia, located in Tbilisi, has over 8000 students and 200 professors, instructors, and staff (University of Georgia, 2019). Of the student population, about 1000 students are international students and 7000 are Georgian students. Georgian is the national language with 86% of the country ethnically Georgian (Misachi, 2017). The Georgian students are all taught in Georgian but are required to study another language while they are there. English and Russian are the most common. There are 30 undergraduate majors and 31 graduate (masters and Ph.D.) majors (University of Georgia, 2019). Most of the national students live with their parents or other family members rather than living in a dormitory.

Sample

The inclusion criteria for this study includes participants between 18- and 40-years- old, ethnic Georgians, who speak English, Georgian, and/or Russian fluently. Participants will be either students enrolled in the university or an employee (staff or faculty) of this university who meets the criteria. They will be required to have access to a computer or device with a camera and video feed capabilities. Those who have been diagnosed with CVD or had an MI or stroke will be excluded. Stratified purposeful sampling will be utilized to collect an equal number of participants based on gender and age (18-years to 29-years and 30-years to 40-years). As the study continues, theoretically selected participants, choosing participants that will yield insight into a specific pattern or them in question, will occur to clarify emerging data variations (Barolia et al., 2013). A gatekeeper will provide recruitment and scheduling support and ensure that participants meet the criteria.

Recruitment procedures

      Recruitment fliers advertising the study will be sent via email to the students and employees (faculty and staff) multiple times with several days separating each email. Each flier (Appendix B) will be translated into Georgian and Russian and have the inclusion criteria, the name and number of the gatekeeper to call and email of the researcher for questions or appointments. The gatekeeper is a Georgian professor of nursing at the University of Georgia who is fluent in all three languages and who will schedule the participants' interviews on behalf of the primary researcher. The gatekeeper is responsible for helping the PI gain access to potential individual participants by talking with potential participants ensuring that the participants understand the study (Munhall, 2012).

Data Collection Procedures

      The primary researcher will communicate with the gatekeeper, interpreter, and students via email and Zoom.

      Interviews. Semi-structured interviews will be conducted by face-to-face video conferencing in a private and quiet place chosen by the participant. The interpreter will also be present either in the same room as the participant or will be connected via their own Zoom connection and providing direct translate throughout the interview. At the start of the interview, after obtaining written consent, the PI will verbally ask the participant demographic questions from the demographic questionnaire (see Appendix C) to ensure that the researcher has correct information and to make the process more efficient. The demographic questionnaire asks for basic background information that will be used when reviewing the transcripts for themes in order to stratify the different participants based on age, gender, occupation, living situation, and any past medical diagnosis.

Participants will be interviewed using a semi-structured interview guide (see Appendix D) and upon completion of the interview be given 10 Lari for their time. These questions were developed based on an ID interview format while focusing on CVD, knowledge, attitudes, and beliefs of the participant. The questions will be adapted to clarify possible themes as the data analysis progresses. Since the PI lived in Georgian for seven years, her knowledge of this culture has also influenced the topics chosen to be questioned, helping to create a platform from which to start the research. The semi-structured interview guide has 10 open-ended questions that will be used to explore their knowledge, attitudes, and beliefs of CVD and risk factors. The participant will be encouraged to elaborate for the PI to further understand their perspective and unique experience. Each interview will be conducted in Georgian and English or Russian and English based on the preference of the participant since the PI's primary language is English, and the participant's primary language is most likely not.

Each interview will last between 1 and 1.5 hours. Those participants who give their permission may be contacted again after the initial analysis for follow-up clarification and the results. It is anticipated that approximately 30 participants will be recruited for interviews, however, recruitment will be suspended when the researcher judges that more data collection would not significantly contribute further to understanding the phenomena (Hunt, 2009). The goal is to discover a professional narrative that informs clinical practice through the knowledge of the best participants (Hunt, 2009; Munhall, 2012).

Participant protection. The research will be conducted in a manner that maintains the respect, confidentiality, and privacy of all participants. Institutional Review Board approval of both Duquesne University and the University of Georgia will be obtained before the recruitment of participants. Informed consent will be signed at the start of each interview. The PI will explain

the procedure and purpose of the research to each potential participant. An interpreter will be used when obtaining the consent and will be required to sign confidentiality forms before starting data collection. Any third-party interpreter or transcriber will also sign a consent form. All consent forms will be translated and available in both Georgian and English, and an interpreter will be present throughout this consent signing and interview process. A copy of the informed consent will be provided to each participant to sign. Then the signed copy will be scanned electronically, and one copy will be emailed to the PI and one to the participant. The hard copy will be shredded once the electronic version has been uploaded. The demographic sheet will be completed together at the start of the interview and recorded electronically on the PI's password protected computer. A research identification number will be assigned starting with 001. Then the recording will start, and each participant will be referred to as that identification number. The participant will be allowed to withdraw from the study at any time. All interviews will be video recorded via Zoom and transcribed in the future with the recording digitally downloaded on a password-protected computer. The electronic informed consent and demographic questionnaires will be stored in a password protected computer as well as password protected external hard drive and will be destroyed three years after the completion of the study. The personal identification will be replaced with the research identification given during the interview.

Data Analysis

This study will follow the ID design. Data collection and analysis happen concurrently to maintain integrity and consistency throughout the study (Thorne et al., 2004; Thorne, Hislop, Armstrong, & Oglov, 2008). Directly after each interview, the PI will spend time reflecting on the interview and record thoughts and ideas in field notes (Barolia, Petrucka, Higginbottom,

Khan, & Clark, 2019). During analysis, these notes will assist the PI in contextualizing the data, while helping to maintain the integrity of the participant's stories (Barolia et al., 2019).

As the interviews are transcribed, they will be uploaded to NVivo qualitative software. Each transcript will be reviewed several times prior to any coding to allow for a better understanding of the participant's meaning. The PI then will code each transcript to help identify groups and sorting them into patterns and eventually into a range of a thematic summary or conceptual description (Barolia, Clark, & Higginbottom, 2013; Thorne, 2016). The coded transcripts of categories will be reviewed for common patterns that are present as well as areas where more information is necessary or information needs to be clarified or validated (Barolia et al., 2019). The PI will use this information to seek out people to interview based on the needed information. The final analysis will create a structure of assessment, planning, and interventional strategies that can be applied in a clinical setting (Thorne et al., 2004).

Rigor. Rigor in this study will be done concurrently through data collection and analysis (Morse, 2015). Purposeful and then thematic sampling of this university population will help provide a thick description of the Georgian culture's knowledge, attitudes, and beliefs about cardiovascular disease. This description provides increased opportunities for data replication and reliability, although this is difficult in qualitative research (Morse, 2015).

To ensure descriptive validity (Maxell, 2002), translation and back-translation will be performed by two or more interpreters (Squires, 2008). These will be professional interpreters with at least two years of work experience in medical interpretation and simultaneous translation. They will be recruited from the University of Georgia or other universities in Tbilisi, Georgia. This is to ensure proper transfer of information between languages, limiting bias and ensuring descriptive validity, the steps are as follows: The interpreter will translate as necessary for the

participant and researcher throughout the interview. Then a second interpreter will translate the audio recording from Georgian to English. This English translation is then translated by a third interpreter back into Georgian to ensure proper translation. Both the second English translation and the second Georgian translation will be compared to the original transcription, reviewing for accuracy, objectivity, and quality (Squires, 2008). Any inconsistencies will be discussed by the primary researcher, her committee chair, and the interpreter (Squires, 2009). By conducting back translation, objectivity by the interpreter will be evaluated, and any variations will be addressed through discussion with the primary researcher's dissertation chair and the interpreter to come to a resolution. All threats to validity will be addressed after the data is collected and tentative accounts have been developed (Maxwell, 2002). This will be piloted on the first two interviews of the interpreter or the first two of the various interpreters. Then back translation will be used sporadically throughout or when the researcher suspects the interpretation is not correct.

To minimize unconscious bias and ensure interpretive validity (Maxwell, 2002), the PI will employ for reflexive journaling throughout the data collection and analysis process. Reflexivity will be used to document impressions and provide an account of the actions and decisions taken during the research process, the appropriateness of the interview questions, and a compilation of thoughts based on previous interviews to discover new topics that have not been explored (Rettke, Pretto, Spichiger, Frei, & Spirig, 2018). During analysis, the PI will meet regularly with her chair to discuss evolving and data interpretation, coding, themes, and patterns to minimize bias and optimize interpretive validity

The English translations of the transcripts will be uploaded into NVivo version 12 to be analyzed starting with the first interview and observation. All data will be destroyed three years after the completion of the study.

Study Limitations

This study will be conducted at a large private university in the middle of the capital city. Students at this university may have to incur a larger financial burden compared to students who are attending a state university. Therefore, this population may be in a higher socioeconomic bracket and have more education as compared to those who attend public universities. Research has shown that those from a lower socioeconomic status have lower education levels (Pac, Tobiasz-Adamczyk, Brzyska, & Florek, 2013). Therefore, this population would not be representative of students or faculty throughout the general Georgian population. Data will be collected to identify participants' income range and if they are students, how their education is being funded, and their education level to better understand this population.

There is the possibility of potential bias from the participants, the researcher, and the interpreter. The primary researcher has lived in and worked in this country off and on since 2004 and has acquired presuppositions that she will need to be aware of and address throughout the study. The participant may not feel comfortable sharing some aspects of the dialogue or may have a desire to tell the primary researcher what they think the researcher wants to hear. The interpreter will attempt to give a simultaneous translation, however, conversations before and after each interview may not be translated or may impact the responses by the participant at which they interpret the participant or researcher's message. All of these will be addressed as they arise.

Potential Problems

A potential problem of limited recruitment exists. There is a possibility that the desired number of participants cannot be recruited due to scheduling conflicts, school commitments, or lack of interest. In order to minimize this, the gatekeeper and recruitment fliers will be evaluated

and readministered via email if needed to increase recruitment. The gatekeeper will be actively recruiting students and employees (faculty and staff) as well as advertising for participants. The participant will be given a small stipend for their assistance and the interpreter (s) will be paid for the going rate per hour. The researcher will also be transparent on her availability and timeline as well as working with the gatekeeper and the proper university authorities to minimize disruption. Failure to obtain the needed permission to conduct this research from the Georgian University is a possibility. All attempts to follow the university's ethics committee requirements will be taken, as well as regular contact with members of this committee.

The interpreter may not be able to translate word for word and summarize instead, thus eliminating information from the analysis. The interpreter will be corrected by the primary researcher. If after multiple attempts by the interpreter, or the back translations do not match, then the interpreter will be replaced as the final action.

Finally, a threat to the PI's safety is a possibility. This will most likely occur due to the COVID-19 pandemic or to political unrest in the country. Currently, the borders to the country of Georgia are closed to any foreigners for the remainder of March. The University is also limited in how students are attending classes. Therefore, the PI will rely on the gatekeeper to complete this recruitment without the PI present in the country but under the PI's supervision. Money will be wire transferred to cover the fees. If by chance, the pandemic settles down and foreigners are allowed into the country of Georgia, the PI may attempt a short trip to help set up the study and conduct her first few interviews.

Georgia is considered a lower-middle-income country with both parts of its land and economic system tied directly to the stability of the Russian Federation, an upper-middle-income country (The World Bank, 2018). Georgia and the Russian Federation have had conflict over

land and resources for over a century with the most recent in 2008 (De Waal, 2010). Though

both countries have been stable, there is currently still no Russian embassy in Georgia and the

Russian Federation continues to take resources that are within Georgian boundaries. If either of

these happen, the PI will confer with her committee chair about future options.

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Appendix A: Timeline for the proposed timeline.

March 2020- Proposal Defense
March and April 2020- IRB submission and approval and grant funding application
May through August 2020 Data collection and initial data analysis
Fall 2020—Fall 2021 Data analysis
Spring 2022 Dissertation defense

Appendix B: Recruitment Flyer Sample

Knowledge, attitudes, and beliefs of cardiovascular disease and cardiovascular risk factors. Be part of the first research study of its kind in Georgia.

- Would you be interested in sharing what you know and believe about cardiovascular disease and cardiovascular risk factors?
- Are you between the ages of 18 years and 40 years old?
- Are you a student, faculty, or staff of the University of Georgia?
- Are you ethnically Georgian and grew up in Georgia?
- Do you have access to a device that allows for video calls?

Then we want to hear your story!

The purpose of this study is to understand what young adult Georgians know, believe, and their attitude towards cardiovascular disease and cardiovascular risk factors Benefits include sharing your knowledge and view in a confidential interview format that will be part of research study. Participants will receive a small incentive payment for their time.

This study is being conducted by Kim Crawford, a nurse researcher from Duquesne University in Pittsburgh, Pennsylvania in the United States.

Please email Kim Crawford (crawfor8@duq.edu)
or call Marina Jimukhadze at +995 577 751 161 for more information.

Appendix C: Demographics

1. Gender _____
2. Age (in years) _____
3. Position at university_____
4. Education level (circle one)
    a. Secondary School
    b. University/Bachelors
    c. Masters
    d. Doctorate
5. Major/Profession_____
6. If a student, who pays for your education
    a. Government
    b. Family
    c. Both
    d. Other
    e. Not applicable
7. Circle the range of income by your parents, if a student, or your own
    a. Less than 10,000 GEL/Year
    b. 10,000-25,000 GEL/ year
    c. 25,001- 40,000 GEL/year
    d. 40,001-55,000GEL/Year
    e. Greater than 55,000 GEL/Year
    f. unknown
8. Ethnicity_____
9. How many people live with you? _____
10. What are their relationships to you (spouse, child, parent, aunt, uncle, friend, etc)_____
_____
_____

11. Past Medical diagnosis (if any)
_____
_____

12. Medications taken regularly (if any)_____
_____

13. May I contact you in the future for a follow-up? _____

Appendix D: Semi-structured interview guide

1. Can you tell me what you know about heart disease?

2. How would you describe your health overall?

3. What do you like to eat when you are at school, at home?

4. Is exercise a part of your life, and if so what kind of exercise do you like to do?

5. Can you tell me what you know about tobacco use?

6. Can you tell me when and why you go see a doctor or health care provider?

7. Can you describe your celebrations? What is your role? Who is the present?

8. Can you tell me about any heart disease-specific education you have received?

9. Who do you hang out with the most? What are their beliefs about heart health?

10. Can you tell me what you know about alcohol use?

Knowledge, Attitudes, and Beliefs of Cardiovascular Disease Prevention in Young Georgian

Adult

Cardiovascular disease (CVD) is the largest mortality contributor globally and is highest in former Soviet Union countries (World Health Organization, 2021). Due to the fall of the Soviet Union in 1991, the country of Georgia inherited a Semashko model of healthcare that emphasized quantity of physicians over quality of service provided (Wold et al., 2013). Decades of reform that included privatization of healthcare facilities and universities has improved quality of care and health indicators (Sakvarelidze, 2020). In 2013, the Georgian Parliament passed the universal healthcare act to help alleviate the nation's struggle with high out-of-pocket expenses and limited preventative care (Sakvarelidze, 2020). Even with healthcare reform and universal healthcare for publicly financed health services in Georgia, CVD is the leading cause of mortality at 46% and provides a huge economic burden to the population (Sakvarelidze, 2020; Verulava et al., 2017; World Health Organization, 2018).

Primary and secondary prevention for CVD and risk factors in Georgia have not been explored on a large scale. This is problematic since modifiable risk factors are asymptomatic until CVD develops leading to incidents such as myocardial infarction (MI), stroke, and death (Bucholz et al., 2018; Tzoulaki et al., 2016). Cardiovascular (CV) modifiable risk factors include hypertension, hypercholesterolemia, tobacco use, harmful use of alcohol, diabetes mellitus, and obesity due to physical inactivity and diet/nutrition (Tzoulaki et al., 2016; World Health Organization, 2021). In Georgia, 70% of all CVD mortality is related to incidence of MI and stroke (Sakvarelidze, 2020). Due in part to asymptomatic risk factors, and despite improvement in public awareness of non-communicable disease severity, many people fail to associate CV risk factor behavior to an increase in CVD incidence (Chkhaidze et al., 2013).

Knowledge, attitudes, and beliefs are independent constructs but frequently interact (Jensen & Moser, 2008). Cardiovascular disease and risk factor knowledge on the individual level may help improve awareness, set goals, or identify steps towards reaching those goals. However, this knowledge does not necessarily motivate behavior change; nor does heart-healthy behavior predict CV risk factor knowledge (Bucholz et al., 2018; Lynch et al., 2006). Healthcare providers (HCPs) are equipped to understand behavior choices and develop supportive interventions to improve CVD outcomes when they understand the population's knowledge of CVD and risk factors, the population's attitudes attributed to specific preventative behaviors, and heart-healthy beliefs (Heine et al., 2021).

People make informed choices about healthy behavior when their health knowledge, attitudes, and beliefs are positively linked (Alzaman et al., 2013; Jensen & Moser, 2008). Knowledge does not directly result in healthy attitudes or motivating beliefs necessary for a person to change behavior (Jensen & Moser, 2008; Lynch et al., 2006; O'Toole et al., 2019). People are more determined to change unhealthy behavior when they have knowledge, e.g., risk awareness, and believe they are susceptible to a specific disease and then have attitudes and beliefs that support preventative healthcare interventions (Alzaman et al., 2013; Jensen & Moser, 2008). Attitudes are a compilation of beliefs around a situation or object that predisposes the person to respond preferentially (Hofstede, 1998; Tedesco et al., 2015). Attitudes are specific to actual situations whereas beliefs are more abstract, but they both are evaluative in nature (Hofstede, 1998; Tedesco et al., 2015). Together both contribute to defining the culture of a specific group of people (Hofstede, 1998; Tedesco et al., 2015). Therefore, beliefs in the value of preventative behavioral action and positive attitude are associated with the probability that the behavior will be performed (Peltzer & Pengpid, 2018). When knowledge, attitudes, and beliefs

are aligned with positive health behaviors, the greatest impact on one's health becomes apparent (Jensen & Moser, 2008).

Age, gender, and culture have contributed to and impacted knowledge, attitudes, and beliefs of CVD and CV risk factors. However, in Georgia, a paucity of research exists regarding the knowledge, attitudes, and beliefs of CVD and associated risk factors in young adults (Crawford et al., 2021). Young adults 18 to 40 years of age are less likely to have an MI or stroke than those over 40 years (Bucholz et al., 2018; O'Toole et al., 2019; Zeitouni et al., 2020). Yet, changes to modifiable CV risk factors in this age group can influence possible future episodes of CVD (Bucholz et al., 2018; Zeitouni et al., 2020). Additionally, heart-healthy lifestyle knowledge and practice started at an early age provides more sustainable positive health habits (Bucholz et al., 2018; Zeitouni et al., 2020).

Men and women may experience CVD risk factors differently, so gender should also be considered to better understand perceptions and unique physiologic differences (Ventura-Clapier et al., 2020). In Georgia, 35% of men have a risk of premature death from CVD (ages 30-70 years) while women only have a 16% risk (World Health Organization, 2018). Additionally, CVD mortality is higher in men (56%) than women (44%) (Geostat, 2021). The World Health Organization (2018) has identified CV risk factors in Georgia as alcohol consumption, tobacco smoking, physical inactivity, obesity, high blood pressure, and high blood glucose. There are noted differences in risk factors between men and women; men had higher alcohol and tobacco use and women were more likely to be obese. However, physical inactivity, elevated blood pressure, and blood glucose were nearly the same for both sexes (World Health Organization, 2018).These data suggest that Georgian men and women may exhibit distinct gender similarities and differences related to CV knowledge, attitudes, and beliefs that will influence CV health.

Georgian culture may influence CV knowledge and risk behaviors. Positive and negative cultural attitudes regarding various health habits, such as types of traditional cuisine and smoking tobacco use, are passed down through generations in many cultures (Chkhaidze et al., 2013; Fernandez et al., 2015). According to Roberts et al. (2013) regarding tobacco use 73.3% of Georgians were aware of the CVD risk and 28.4% for stroke risk. Yet only 30% of the same population supported the total ban on smoking in public places, demonstrating a gap between knowledge and attitudes/beliefs (Roberts et al., 2013).

A recent integrative review revealed only two articles that addressed the knowledge, attitudes, and beliefs of CVD and risk factors in Georgia, leaving gaps in the scholarly literature (Crawford et al., 2021). Georgian young adults have not been studied regarding their perspectives about CVD and the importance of early interventions to minimize CV risk factors. Therefore, a qualitative study examining knowledge, attitudes, and beliefs of Georgian young adults was conducted. The aims of the study were to 1) explore the CV knowledge and preventative practices of Georgian young adults; 2) identify any life experiences that influenced Georgian young adults' knowledge, attitudes, and beliefs related to CVD and preventative practices; and 3) identify any distinct gender differences between men and women in CV knowledge, attitudes, and beliefs.

Method

Interpretive description, an inductive qualitative method, was used in sampling, data collection, and analytic decisions (Thorne, 2016). This methodology seeks to identify categories and patterns within the participants' subjective and experiential testimonies. Multiple, broad categories are developed and reexamined repeatedly until themes are apparent. Through this process, themes are interpreted as applicable to clinical concepts. According to Thorne (2016)

application bridges the researcher-practitioner gap while not losing sight of the whole person. The researcher's knowledge and experience of the phenomenon becomes the starting point of orienting the research design. The result is an interpretation that is both individualistic and a collective representation of the data.

Sample and Setting

A convenience sample of young adults affiliated with a private university in Tbilisi Georgia, was recruited for this study. The inclusion criteria included participants who were 18 to 40 years of age, self-reported as ethnically Georgian, and affiliated with this university, either as a student or employee. This study followed the principles of the Declaration of Helsinki (World Medical Association, 2018) and was approved by the Institutional Review Board of Duquesne University in Pittsburgh, Pennsylvania, and the Ethics Committee of the University of Georgia in Tbilisi, Georgia.

Data Collection

Data collection was conducted during the summer 2020. A gatekeeper, a nursing processor at the university who was fluent in English, Georgian, and Russian, recruited participants. All communication between the researcher and gatekeeper was done via email and internet video calls. Once the gatekeeper identified a participant, the researcher contacted the participant via email to provide details about the study, provide a link to the electronic consent form to sign, and confirm a scheduled appointment for the interview. All participant interviews were conducted via Zoom®, an audio/video internet computer platform, which recorded and provided a written transcript. Interviews were conducted in English with direct Georgian interpretation. Each interview began with the researcher explaining the study and confirming the consent form signature. Data collection began by completing a verbal demographic

questionnaire, followed by a semi-structured interview (see Table 1). After each interview, all personal identifiers were removed, and a participant number was assigned to each transcript by the researcher. The English transcripts were then checked for accuracy several times while listening to the audio recording. A journal was kept exploring further ideas and refining questions for future interviews throughout the data collection process,

To ensure descriptive validity and trustworthiness of the data, translation and back-translation of interviews was performed by a second interpreter, fluent in English, Georgian, and Russian (Maxwell, 1992; Squires, 2009). A second interpreter confirmed the quality of the Georgian and English interpretations provided by the first interpreter. Any suspected errors were written in English on the corresponding transcript and reviewed by the researcher, thereby minimzing the threats to descriptive validity throughout the data collection process (Maxwell, 1992). The gatekeeper and both interpreters, signed consent forms to keep all information confidential.

Data Analysis

Data analysis began after the first interview, reviewing the audio, video, and written transcripts several times. Transcripts were coded to label segments of the data to capture and identify main thoughts and categories. Tables were then created to organize categories that were related to the topics of interest and allowed for the ability to juxtapose segments of the data (Kalpokaite & Radivojevic, 2019). These tables were reviewed multiple times throughout the analysis process with notes documenting the evolution of the data and interpretation to descriptive and interpretive themes (Thorne, 2016). Notes were added to the researcher's journal (as was previously described).

Results

Nine men and ten women comprised the final sample of 19 participants who were interviewed from June to August 2020, during the COVID-19 pandemic. Each interview lasted between 45 and 75 minutes. Participants were ethnic Georgian, students (identifying number with an S) and/or faculty (identifying number with an F) from a large, private university in Tbilisi. Their ages ranged from 18 to 38 years with varied levels of education from secondary school graduates to graduate-level education, including the Ph.D. degree. Within this group, ten students were completing their baccalaureate degrees and nine had completed graduate degrees (see Table 2).

Upon analysis, four thematic areas were identified concerning Georgian young adults' knowledge, attitudes, and beliefs about CVD and associated risk factors: 1) CVD and risk factor knowledge, 2) attitudes and beliefs and associated gender differences, 3) the influences of health literacy, and 4) culture and societal influences affecting CVD knowledge, attitudes, and beliefs within the population.

Cardiovascular Disease and Risk Factor Knowledge

General CVD knowledge ranged from admittedly knowing nothing, to specific CVD diseases (e.g., MI or stroke). Two young students, one man and one woman (S14 and S9) stated they did not know anything about CVD or CV risk factors while an older faculty member (F15) stated it was a complicated question and did not have an answer. Several students (S2, S5, S8) and faculty (F12) knew that CVD was very common in Georgia and the world. One young man (S8) even described CVD as, "the killer of people." Only one 19-year-old (S2) had a more comprehensive understanding of CVD that involved different populations affected (e.g., "80% of [Georgian] population has heart problems"), what diseases it included (e.g., "leads to stroke"), and a risk factor (e.g., smoking).

Sixteen participants (representing all subgroups) associated knowledge of CV risk factors with living a healthy lifestyle. Four men (S1, S8, F15, F18) and two women (S3, F10) identified one or two risk factors, with only 25% of the total sample (S2, S4, F11, F12, F19) reporting four or more correctly (see Table 3). The three participants who recalled four or more risk factors either had a chronic disease, a relative with CVD, or were keenly interested in studying CVD health in their free time; the latter being a first-year university student who had read a scientific paper on bradycardia and became interested in the topic. The most frequently identified risk factors for CVD were nutrition, alcohol consumption, exercise, and smoking tobacco. Smoking tobacco was mentioned most often. Hypertension and hypercholesterolemia were rarely mentioned and were not always directly associated with nutritional or exercise considerations by the participants. Four women (S3, S4, S11, S16) and one man (S1) were aware that increased stress or decreased sleep were risk factors; however, these were not commonly identified as adding to CVD risk.

Nutrition and Alcohol Consumption. Faculty were more likely that students to explain that a healthy lifestyle included a heart-healthy diet (e.g., low fat, low-sugar, and high vegetable diet). Neither students nor faculty defined food portion sizes, only categories and specific types of food. One woman (F11) believed that a heart-healthy diet meant decreasing cholesterol in the diet because, "food that contains cholesterol, like junk food and fats, yes…This is one of the risk factors which affects the cardiovascular system." Five women (S4, F10, F11, F16, F17) and three men (S2, S5, and F12) stated that excessive alcoholic beverage consumption was a risk factor for CVD. Excessive alcohol consumption (e.g., to the point of being drunk) causes health and CVD problems. Risk for obesity was connected to increased simple carbohydrates and fatty food intake and minimal daily exercise.

Exercise. Several men (S2, F12, F19) and women (S4, S5, F13, F17) agreed that sustaining a healthy lifestyle included regular exercise. Yet, no participants directly related physical inactivity to increased CV risk and were unaware of the specific guidelines for regular exercise (e.g., type of exercise, length of time, and frequency). Commonly mentioned exercise programs included playing a team sport, swimming, walking, or focusing on exercises that tone specific muscle groups (e.g., pushups, sit-ups). Eight participants (S6, S7, S8, F11, F12, F14, F16, F19) also discussed physical exercise as their preferred method of relieving stress, but not as a mechanism for reducing CV risk at the same time.

Smoking Tobacco. Twelve participants (S2, S4, S5, S6, S8, F10, F11, F12, F13, F17, F18, F19) were acutely aware that smoking tobacco is a CVD risk factor. Several nonsmoking men (S6, F12,) and women (S5, S7, F16) also expressed a distaste for secondhand smoke due to the smell with one participant stating, "passive smoke is more dangerous than active one [smoke] because the smoke that goes to your lungs can be quite dangerous for your general health." One 30-year-old man (F18) believed that "everyone [all Georgians] has general information about [the] impact and effect of smoking." Even the three current smokers (S14, F17, F18) admitted knowing this information. Additionally, both men (F12, S14) and women (F11, F13) alluded that they knew smoking cessation aids were available, but they were not frequently used by participants or acquaintances when attempting to quit smoking.

Cardiovascular Disease and Prevention: Attitudes, Beliefs, and Gender Differences

Participants' lack of heart-healthy behaviors and presence of CVD risk factors were manifestations of their individual attitudes and beliefs. Several men (S1, S6, S8, S14, F18) and women (S3, S7, S9, F11, F13, F16, F17) mentioned their diet regularly consisted of fried and processed foods, alcoholic beverages, and a lack of physical activity, yet they also acknowledged

that these behaviors might be affecting their health. However, those who listed four or more risk factors (S2, S4, F11, F12, F19) also engaged in the least amount of risky CV behavior with men and women equally represented.

Nutrition. Attitudes towards low fat, high vegetable diet were different than what participants reported eating for snack or mealtime. One woman (F11) said, "I like junk food. I like fatty things." Two men (S6, F12) and one woman (S9) mentioned eating salads consisting of lettuce and vegetables, but these were often mixed with mayonnaise or covered in mayonnaise-based salad dressing.

Dietary choices have changed due to pandemic restrictions for seven men (S1, S6, S8, S14) and women (F11, F16, F17). The shelter-in-place rules limited access to fast-food restaurants, thereby necessitating more home cooked meals that at times were healthier than fast food. However, 12 participants (S1, S2, S6, S7, S8, S9, F11, F13, F14, F16, F17, F18) believed that much of their diet, including Georgian traditional dishes, were delicious but not very healthy. Traditional dishes often contain fat, oil, salt, and large amounts of simple carbohydrates (e.g., white bread). Traditional dishes are also familiar, affordable, and easily accessible, despite the lack of heart-healthy choices. When eating away from home, cost and convenience were more influential than choosing food that was heart-healthy. Food choices did not differ between men and women.

All participants discussed their drinking habits, especially during celebrations. Three faculty (F11, F12, F17) believed having one glass of wine with dinner had a positive effect on for their health but did not specify CV health. Each participant knew how many alcoholic beverages they could consume per occurrence before they became inebriated. Women, both students and faculty, set personal limits ranging from two to five glasses of wine while men,

students and faculty, stated their limit varied from five glasses to a liter and half of wine at Supras, (i.e., celebration or feast).

Exercise. More students (S3, S4, S5, S8, S9, S14) than faculty (F10, F16) recognized the importance of exercise but did not make it a priority in their everyday lives. They reasoned that busy schedules, inadequate gymnasium space, lack of green spaces, and high pollution in the capital city were to blame for their inactivity. Exercise types differed between men and women. Men were more likely to exercise or train with vigorous activities (e.g., running, swimming, or team sports) and in public places (e.g., gymnasiums or outside in parks) Women exercised at home with videos focusing on specific muscle groups, or walking alone or with their dog or friend around their neighborhood. Moreover, three women (S4, F16, F17) believed they needed to lose weight (e.g., reducing nutritional intake and exercise) but did not relate it to CV risk factors. Only one man (S14) was preoccupied with maintaining a healthy weight.

Smoking Tobacco. According to one man (F18), most of the Georgian population smoke, despite their knowledge of the health risks. Three women (S3, F10, F17) and two men (S14, F18) believed they (or their loved one) either have no control over this habit because they are addicted, or smoking makes them feel good and this takes precedent over health. Two men and one woman were current smokers; two faculty had no desire to quit (F17 and F18), while the student had attempted several times to quit without success (S14). Participants (F12, S5) who either quit themselves (S5) or knew of someone who stopped smoking (F12) could pinpoint a critical life event (e.g., pregnancy, birth of their child, or death of a loved one related to smoking) that changed their attitude and belief about smoking. Only one studious student (S2) mentioned that tobacco use has adverse effects on CV health. That notwithstanding, several participants in their teens and 20s (S1, S3, S4, S5, S6, S8, S9, F11) and two in their 30's (F10, F12) said that

they talked with their family and friends about the health benefits of smoking cessation. Those subjects under 30 years of age were more committed to promoting smoking abstinence or smoking cessation among friends and family. One 19-year-old (S4) with no interest in smoking, stated, "I am always talking to everybody to give up [stop smoking]."

Participants considered smoking to be more socially acceptable for men than women. Of the participants who stated a family member smoked, only male relatives were listed (S1, S2, S4, S5, S8, S9, F10, F11, F13, F17). Furthermore, young men growing up in Georgian homes were not discouraged from smoking by their mothers, instead they were asked to smoke outside of the home environment (S4).

Health Literacy Influences on CVD Knowledge, Attitudes, and Beliefs

Health literacy, or a person's ability to find, understand, and use health information (Center for Disease Control and Prevention, 2021) significantly impacted Georgians' CV knowledge and preventative risk factors. Health promotion and disease prevention educational sources varied greatly with each participant. General health education happened sporadically during primary and secondary schooling (S9), with CVD included occasionally. Students (S2, S4, S9) recalled specific stop-smoking campaigns during primary school. Three women (F10, F11, F17) in the healthcare field, (e.g., medical doctors and dentists) referred to their anatomy class during their first years at university as the last time they received CVD education. Additionally, a nursing student (S1) stated that risk factors were omitted from disease overviews in anatomy and physiology course. Secondary sources, such as, TV shows, blogs, advertisements, social media, and the internet were the most named sources, with the internet and social media stated most frequently. Mobile phone applications documenting daily activities (e.g., daily water intake or daily exercise) also provided general healthy lifestyle information

specific to CVD that the user hoped to achieve. Healthcare professionals were the least identified CVD education source (S6, F19).

All participants had broad knowledge of positive health behavior information but do not connect it specifically to reducing CV risk factors. A low-fat, low-sugar diet and regular daily exercise minimize risk factors for other non-communicable diseases besides CVD, such as cancer, and diabetes. General health promotion information (e.g., smoking cessation, low fat diets) is shared directly and indirectly through many sources without specifically informing about other CV risk factors, such as hypertension and hypercholesterolemia. When addressing health promotion education, one man (F18) used the example, "they [the Georgian people] may have heard of the word 'mammogram' but do not realize the importance."

Participants acknowledged that some of their CVD education came from a friend or family member with the disease, which provided them with a more significant connection to CVD. They acquired this knowledge by observing those who had the condition or listening to them recount their personal experiences, leading to a stronger belief of CVD severity and susceptibility. Three students (S6, S7, S14) and one faculty (F17) believed CVD is the most severe disease in Georgia and had a friend or family member with CVD. However, nine participants (S4, S5, S8, S9, F12, F13, F15, F16, F18) believed cancer (e.g., lung, gastrointestinal) to be the most severe disease in Georgia over CVD. One woman (S5) concluded that CVD was more severe due to its sudden emergence unlike cancer because "cancer affects your life, but if you can catch this one [cancer] from early stages, you can cure them."

Healthcare providers were the least mentioned source of CVD education. Two women (S8, F13) stated that family physicians "are just providing medication education," but believed that "it is really important [for the public] to have more knowledge about your disease." Nine

participants (S5, S6, S8, F10, F11, F14, F15, F16, F18) did not remember their physicians or nurses checking their blood pressure or performing a physical assessment. One woman (F11), whose blood pressure had not been measured during her last appointment, reasoned that blood pressure was not related to the focus of her complaint at that time. Only two men (F12, F19) prioritized having their blood pressure checked regularly.

Cultural and Societal Influence on Knowledge, Attitudes, and Beliefs

Cultural and societal traditions influenced CVD knowledge, attitudes, and beliefs. The Georgian culture has centuries old traditions, which continue to thrive today. One of these traditions, the supra, is considered crucial to bestowing the Georgian culture to the next generation. Supras on average occur once or twice a month and are a smorgasbord of food and wine representing the different regions in Georgia. They are filled with toasts and eating food for many hours with friends and family, celebrating the people and culture of Georgia.

Many participants (S4, S6, S8, S9, F11, F12, F13, F17, F18, F19) believed that the traditional Georgian cuisine found at a supra, consisting of heavy meats, cheeses, bread, and cooked vegetables, was necessary for sustaining the Georgian culture. Food was a crucial element of Georgian culture and despite the CV health consequences, changing to a heart-healthy diet would diminish Georgian culture. One man (F12) openly admitted that they are not thinking about CV health when attending a supra but believed that food and wine with friends and guests promoted good communication in comfortable surroundings. Another man (S9) felt that if the cuisine had reduced amounts of salt, fat, and simple carbohydrates, the Georgian culture would "cease to exist." Healthier versions of traditional Georgian food do not exist, nor were the participants interested in creating alternative traditional Georgian cuisine.

Supras were not complete unless Georgian wine was served and toasted regularly throughout the event (S7, S8, F11). Moreover, Georgian's value guests as a blessing and toast wine as a token of appreciation to their guests. During supra toasts, one glass of wine per person is raised in tribute to God, the person, country, and/or family value (e.g., love) and then consumed completely. Between toasts, the attendees refill each other's glasses in preparation for the next toast. Toast participation is compulsory, especially for men; if one does not drink at a supra, then participants believe the person is not Georgian. Georgians' guests are expected to participate as well.

Discussion

This study presents what is known and believed by Georgian young adults about CVD and risk factors influenced by gender and culture. Georgian young adults' knowledge of CVD specific risk factors in this study varied from previous studies from the United States (U.S.) and Turkey. Only two participants listed hypertension as a risk factor and one listed hypercholesterolemia in this study. This is considerably less than in a US study in which over 60% of participants recognized hypertension and hypercholesterolemia as risk factors (Bucholz et al., 2018). Moreover, in a similarly developed country of Turkey, university students listed hypercholesterolemia, stress, and hypertension most frequently as CV risk factors (Güneş et al., 2019). In Georgia, hypertension is responsible for 62.5% of all CVD cases (Sakvarelidze, 2020). The low number of participants reporting hypertension as a CV risk factor may be evidence of a knowledge deficit related to CVD.

Knowledge alone cannot predict positive changes in risk factor behaviors (Bucholz et al., 2018; Lynch et al., 2006; O'Toole et al., 2019). Young adults have expressed an open attitude towards and availability of healthy foods to incorporate healthy lifestyle changes to eliminate CV

risk factors, but do not necessarily believe or practice these behaviors (Lynch et al., 2006; Tran et al., 2017). For instance, participants in this study shared lifestyle behaviors that are often seen in university settings. Binge drinking, low physical activity, increased weight gain, and poor diet choices have been seen within other university settings (Peltzer & Pengpid, 2018; Tran et al., 2017). McKenzie et al. (2020) reported that only 37.3 % of Georgians in their sample consumed fruits and vegetables and Mozaffarian et al. (2014) reported that Georgians had the highest levels of sodium ingested in relation to CVD; both examples are supporting points stated by participants in this study.

Since Georgian traditional foods contain high fats and salts, and binge drinking is common during Georgian supras (Mozaffarian et al., 2014; Russell et al., 2019), maintaining tradition and a heart-healthy diet conflict with each other (Barolia et al., 2019). Participants of a supra are encouraged to partake regardless of their own personal preferences. In fact, it would be better to not attend than to attend and abstain (Barolia et al., 2019; Skhirtladze et al., 2016). Maintaining cultural identity usurps eating a heart-healthy meal; participants expressed their proudness of being Georgian in their love of the supra tradition. More research is needed by Georgian gastronomy experts to decrease the fat and salt while not losing the flavor that Georgians expect in these dishes.

Other barriers to changing to a heart-healthy diet lie in the communal aspect of Georgian culture. Most of the participants in this current study live in multigenerational households with shared foods (Skhirtladze et al., 2016), therefore, changing the diet would require nearly all family members to make these changes for it to be successful (Barolia et al., 2019). In this stage of life, only five participants were married and the rest either lived with their parents or a family relative. Moreover, in a family-oriented society, traditional family roles might still be held by

older generations and not yet passed down to this current generation (Skhirtladze et al., 2016). Both men and women in this current study reported that they either cooked or had strong influence over heart-heathy food prepared in the home. One possiblility for this finding may be because both men and women were working outside the home, family roles were becoming more blurred (United Nations Development Programme, 2013). Another possibility is the COVID pandemic may have influenced findings but this influence is not clear.

Gender differences in CVD risk factors (both knowledge and behavior) varied slightly but were most significant related to smoking. Particpants reported more male smokers than female smokers. A study conducted by the United Nations Development Programme (2013) showed 77% of respondents believed it is unacceptable for Georgian women to smoke cigarettes. Combining these two findings implies that smoking is a masculine-acceptable activity in Georgia, though the question was not explicitly asked to the participants. Another study conducted in the former Soviet Union (including Georgia) showed between 40-60% of men and 1-16% of women were smokers (Georgia men 52.8% and women 6.1%) (Roberts et al., 2013).

Smoking in Georgia has decreased in recent years, which is attributed to several different events. Over the last decade, Georgian private and public sectors have dramatically changed the Georgian tobacco use landscape by implementing tobacco-free laws in schools and public places (Agaku et al., 2015), advertising the increased dangers of using tobacco (Mir et al., 2013), and developing non-communicable disease programs addressing tobacco use as a risk factor (Berg et al., 2019). The government and community coalition produced a comprehensive smoke-free air policy, which passed in Georgia legislation in 2018 (Berg et al., 2019), and according to the current participants, is being upheld. This may also explain why all smoking and non-smoking

participants in this study favored no smoking in public venues despite initial resistance due to the inconvenience.

Georgian young adults are not receiving regular health education and screening regarding CVD and CV risk factors. Modifiable risk factors and lifestyle behaviors need to be instituted during these young adult years to decrease CVD in the future (Liu et al., 2012). Currently, Georgian physicians and nurses do not routinely screen for CVD risk factors, e.g., hypertension and hypercholesterolemia, at every visit according to the findings. It is imperative that these basic CV risk factor screenings occur by the family physician or nurse at least once a year (Bucholz et al., 2018; Zeitouni et al., 2020).

In this study, participants believed that a patient should receive regular health promotion and disease prevention from HCPs. According to Muhihi et al. (2020), most young adults (from non-western cultures) received information about CV risk factors from relatives/neighbors and the media with slightly over 25% from HCPs. This research was similar to the findings of this study. Yet, researchers have shown that when HCP interventions involve patient education, patients have significantly higher levels of sustained knowledge and positive health promotion practices to decrease modifiable risk factors (Heine et al., 2021). In Georgia, medical and nursing education programs vary and may not emphasize health promotion and disease prevention. Nursing education is considered technical education and one does not require a university degree in order to practice as a nurse. This type of education can lead to a lack of knowledge and focus on holistic care (Squires et al., 2019). Georgian universities are now offering bachelor's degree programs in nursing that may change how nurses are perceived and what services might be offered in health promotion and prevention. Moreover, by educating and training HCPs to

deliver this information, health literacy and CVD risk factor management may improve

(Tavakoly Sany et al., 2018).

Nursing Implications

These findings are transferable to other young adult populations in Georgia especially

those attending other universities (regardless of private or public). This research illustrates the

need for and importance for HCPs to provide both screening and education about CVD.

Currently, nurses in Georgia are limited in performing fundamental procedures such as taking

vital signs and doing routine health assessments. However, as the healthcare system in Georgia

progresses, nurses have an opportunity to assume a more active role in facilitating these patient

care priorities and policy changes that will influence CV health. This change would require a

standard of nursing education that includes instructions on how to educate patients and families.

At the present time, nurses do not play a key role in patient education within the Georgian

healthcare system. Nurses may need additional training in patient education if they did not

receive that information during their primary nursing education programs.

A collaborative approach by the government, physicians, and nurses may have a

significant impact on providing preventative education to the Georgian population. Nurses could

initiate CVD education for the public during regular primary care appointments and in other

health care settings. Moreover, nurses can play a significant role in identifying individuals at risk

for CVD as well as educating young Georgians about these risk factors and healthy lifestyle

changes prior to a CVD diagnosis. Finally, school nurses could provide basic health education in

primary and secondary schools that may have a significant impact on the CVD mortality for

future generations.

Limitations

This study was conducted during the first year of the COVID-19 pandemic, resulting in interviews completed via video conferencing. This approach did not allow observational data to be obtained other than facial expressions However, the primary researcher conducting this study lived in the country for more than six years and was familiar with many of the non-verbal gestures and facial expressions, all of which added to the understanding and interpretation of the data (Ryen, 2003). Additionally, this sample was recruited from one university setting where many participants were highly educated. This may have influenced the results, as populations with more education typically have fewer modifiable risk factors and more knowledge about risk factors (Sarpong et al., 2017). Choosing a population with a lower level of education may provide a different perspective on this topic. Finally, asking participants to recall something that may have a negative stigma attached to it, such as smoking or alcohol consumption within their culture, could have led to potential social desirability bias, or minimizing reports of participation in high-risk health behaviors (Althubaiti, 2016). Efforts to minimize bias included building rapport with participants, phrasing questions in open-ended, neutral format, using triangulation between/among the interviews, observing of facial expressions during the interviews, and making journal entries (Althubaiti, 2016; Morse, 2015).

Conclusion

Georgian young adults displayed a basic knowledge of CVD without fully understanding the components of a heart-healthy lifestyle to minimize CV risk factors. Georgians wrestle with conflicting priorities and minimizing negative risk factor behaviors. Men especially struggle with the masculine view of smoking and compulsory view of drinking traditions during a supra. More research is needed to study these gender difference and lessen the stigma related to them. Finally, physicians and nurses must have an opportunity to become more involved in promoting a heart-

healthy lifestyle. Educating and encouraging nurses to take a more active role in cardiovascular-related screening and patient education will serve as a strong foundation on which to build positive health beliefs and CVD prevention.

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Table 1

Semi-structured Interview Guide

Introduction, consent, purpose of interview, and introduce interpreter

1. Can you tell me what you know about heart disease and risk factors?
2. How would you describe your health overall?
3. What do you like to eat when you are at school, at home?
4. Is exercise a part of your life, and if so what kind of exercise do you like to do?
5. Can you tell me when and why you go see a doctor or health care provider? What type of tasks do they preform while you are there?
6. Can you tell me about any heart disease-specific education you have received? Do you think that lay people should be educated about their health? Who is responsible?
7. Do you think anticipatory guidance is important? (What to expect as you get older? What screening tests are important?)
8. Can you tell me what you know about tobacco use? What is your view on the banned smoking in restaurants and bars?
9. Can you tell me what you know about alcohol use? What type of alcohol do you prefer?
10. Tell me about how you deal with stress. How do you take care of yourself?
11. Who do you hang out with the most? What are their beliefs about heart health?
12. Can you describe your celebrations (Supra)? What is your role? Who is the present? What does the word Supra mean to you?
13. What does Georgian wine mean to you and to Georgia? What about Georgian food?
14. Can you tell me about how COVID-19 has affected your health?
15. What role if any does religion play into your health?
16. What is the most severe disease in Georgia? What is the most prevalent? Why?

May I contact you to follow up in the future?

Table 2

Demographics of Participants

	All
Age	
18 to 24 years	9
25 to 34 years	7
35 to 39 years	3
Gender	
Male	9
Female	10
Profession	
Student Undergraduate	10
Faculty	9
Salary (in Georgian Lari) *	
Less than 10K	1
10K to 24999K	14
25K to 30K	4
Past medical history	
None	15
Chronic disease	4

*3.10 Georgian Lari is equivalent to 1 USD

Table 3

CVD Risk Factor Knowledge by Number of Participants

	Number of participants that listed specific risk factor
World Health Organization modifiable/behavioral risk factor	
Smoking tobacco	12
Increased alcohol consumption	8
Physical inactivity	7
Unhealthy diet	6
Obesity	3
Physical inactivity	5
Diabetes (hyperglycemia)	3
Hypertension	2
Cholesterol	1
World Health Organization underlying determinants of CVD	
Hereditary factors	5
Stress	5
Environment (Pollution)	2
Old age	1
Risk factors listed participants but not World Health Organization	
Infections	1
Female problems	1
Sleep	1
Participants that could not list any risk factors	2